



# SAR TEST REPORT

No. 23T04Z80001-09

For

**TCL Communication Ltd.**

**Tablet PC**

**Model Name: 9136R, 9136K**

with

**Hardware Version: 05**

**Software Version: 7WS2**

**FCC ID: 2ACCJB210**

**Issued Date: 2023-11-6**

**Note:**

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

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## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Issue Date</b>	<b>Description</b>
23T04Z80001-09	Rev.0	2023-11-6	Initial creation of test report

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## 1 Test Laboratory

### 1.1 Introduction & Accreditation

**Telecommunication Technology Labs, CAICT** is an ISO/IEC 17025:2017 accredited test laboratory under American Association for Laboratory Accreditation (A2LA) with lab code 7049.01, and is also an FCC accredited test laboratory (CN1349), and ISED accredited test laboratory (CAB identifier:CN0066). The detail accreditation scope can be found on A2LA website.

### 1.2 Testing Location

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

### 1.3 Testing Environment

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

### 1.4 Project Data

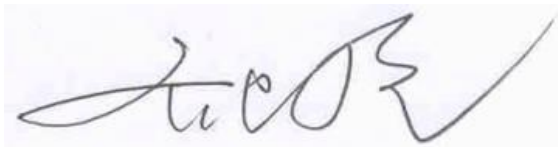
Project Leader:	Qi Dianyuan
Test Engineer:	Yao Juming
Testing Start Date:	October 7, 2023
Testing End Date:	October 30, 2023

### 1.5 Signature

姚聚明

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**Yao Juming**  
**(Prepared this test report)**



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**Qi Dianyuan**  
**(Reviewed this test report)**

陆冰松

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**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 TCL Communication Ltd. Tablet PC 9136R,9136K are as follows:

**Table 2.1: Highest Reported SAR (1g)**

Technology Band	Body SAR 1g (W/kg)	Equipment Class
WCDMA1900	<b>0.99</b>	PCT
WCDMA1700	<b>1.27</b>	
WCDMA 850	<b>0.49</b>	
LTE B7	<b>1.10</b>	
LTE B12/B17	<b>0.63</b>	
LTE B14	<b>0.84</b>	
LTE B2/B25	<b>1.34</b>	
LTE B5/B26	<b>0.50</b>	
LTE B30	<b>0.88</b>	
LTE B41 PC3	<b>0.44</b>	
LTE B41 PC2	<b>0.61</b>	
LTE B4/B66	<b>1.38</b>	
WLAN 2.4GHz	<b>0.86</b>	
WLAN 5GHz	<b>1.00</b>	NII
BT	<b>0.26</b>	DSS

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

For body operation, this device has been tested and meets FCC RF exposure guidelines when used with any accessory that contains no metal and which provides a minimum separation distance of 0mm/9mm/10mm/11mm/13mm/14mm 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:

**Body: 1.38 W/kg(1g) (Top 14mm)**

Remark:

This device supports both LTE B2/B4/B5/B17 and LTE B25/B66/B26/B12. Since the supported frequency span for LTE B2/B4/B5/B17 falls completely within the supports frequency span for LTE B25/B66/B26/B12, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B25/B66/B26/B12.

**Table 2.2: The sum of SAR values for Main antenna + WiFi-2.4G**

/	Position	Main antenna	WiFi-2.4G	Sum
<b>Highest SAR value for Body</b>	Rear 14mm (LTE B66)	1.22	0.21	<b>1.43</b>
	Top 14mm (LTE B66)	1.38	0.12	<b>1.50</b>
	Rear 0mm (LTE B12)	0.63	0.86	<b>1.49</b>
	Top 0mm (LTE B66)	1.05	0.36	<b>1.41</b>

**Table 2.3: The sum of SAR values for Main antenna + WiFi-5G +BT**

/	Position	Main antenna	WiFi-5G	BT	Sum
<b>Highest SAR value for Body</b>	Rear 14mm(WB4)	0.96	0.49	<0.01	<b>1.45</b>
	Top 14mm(WB2)	0.99	0.42	<0.01	<b>1.41</b>
	Top 0mm (WB4)	0.73	0.56	0.11	<b>1.40</b>

According to the above tables, the highest sum of reported SAR values is **1.50 W/kg (1g)**. The detail for simultaneous transmission consideration is described in chapter 13.

**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.





### 3 Client Information

#### 3.1 Applicant Information

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#### 3.2 Manufacturer Information

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Address/Post:	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Contact Person:	Annie Jiang
Contact Email:	nianxiang.jiang@tcl.com
Telephone:	+86 755 3661 1621

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

### 4.1 About EUT

Description:	Tablet PC
Model name:	9136R, 9136K
Operating mode(s):	WCDMA850/1700/1900 LTE Band2/4/5/7/12/14/17/25/26/29/30/41/66,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)
	2502.5 – 2567.5 MHz (LTE Band 7)
	699.7 – 715.3 MHz (LTE Band 12)
	790.5 – 795.5 MHz (LTE Band 14)
	1850.7 – 1914.3 MHz (LTE Band 25)
	814.7 – 848.3 MHz (LTE Band 26)
	2307.5 – 2312.5 MHz (LTE Band 30)
	2496 – 2690 MHz (LTE Band41)
	1710 –1780 MHz (LTE Band 66)
	2412 – 2462 MHz (Wi-Fi 2.4G)
	2400 – 2483.5 MHz (Bluetooth)
	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)	
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/SN	HW Version	SW Version
EUT1	016486000001969	05	7WS2
EUT2	016486000001997	05	7WS2
EUT3	016486000001951	05	7WS2
EUT4	016486000000912	05	7WS2
EUT5	016486000000938	05	7WS2
EUT6	016486000000953	05	7WS2

\*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 EUT4-6.

#### 4.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Battery	TLp040M7	/	Veken

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

## 5 TEST METHODOLOGY

### 5.1 Applicable Limit Regulations

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

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

### 5.2 Applicable Measurement Standards

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

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

**KDB616217 D04 SAR for laptop and tablets v01r02** SAR Evaluation Considerations for Laptop, Notebook, Notebook and Tablet Computers.

**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 ( $\rho$ ). The equation description is as below:

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

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

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

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

Where:  $C$  is the specific heat capacity,  $\delta T$  is the temperature rise and  $\delta t$  is the exposure duration, or related to the electrical field in the tissue by

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

Where:  $\sigma$  is the conductivity of the tissue,  $\rho$  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**

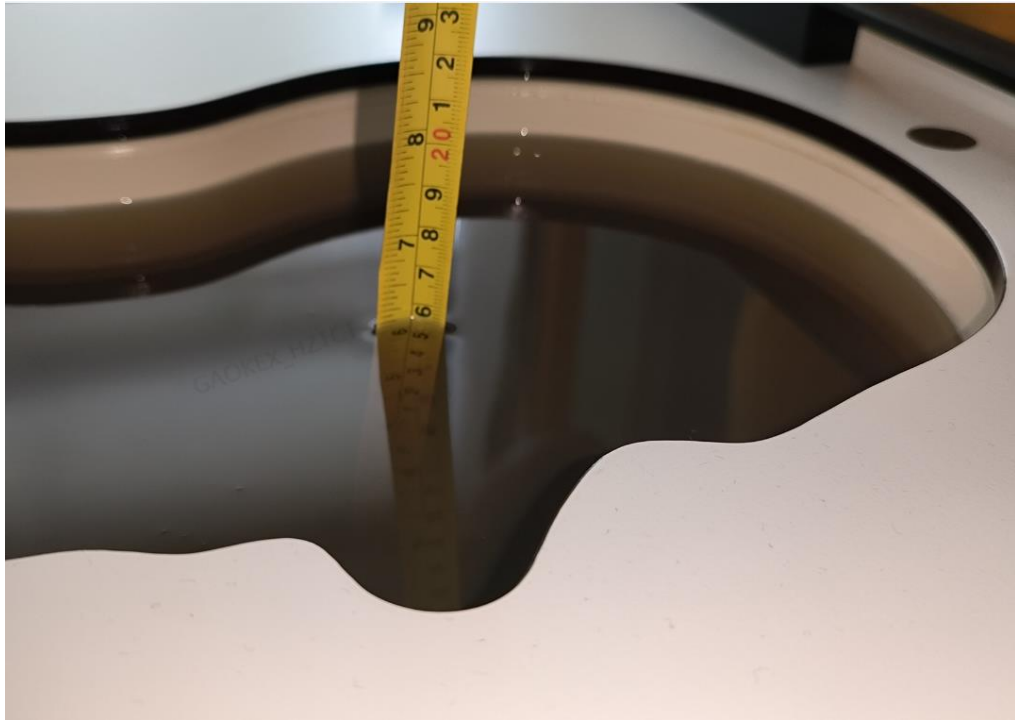
Frequency(MHz)	Liquid Type	Conductivity( $\sigma$ )	$\pm 5\%$ Range	Permittivity( $\epsilon$ )	$\pm 5\%$ Range
750	Head	0.89	0.85~0.93	41.94	39.8~44.0
835	Head	0.90	0.86~0.95	41.5	39.4~43.6
1750	Head	1.37	1.30~1.44	40.08	38.1~42.1
1900	Head	1.40	1.33~1.47	40.0	38.0~42.0
2450	Head	1.67	1.59~1.75	39.47	37.5~41.4
2600	Head	1.96	1.86~2.06	39.01	37.1~41.0
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

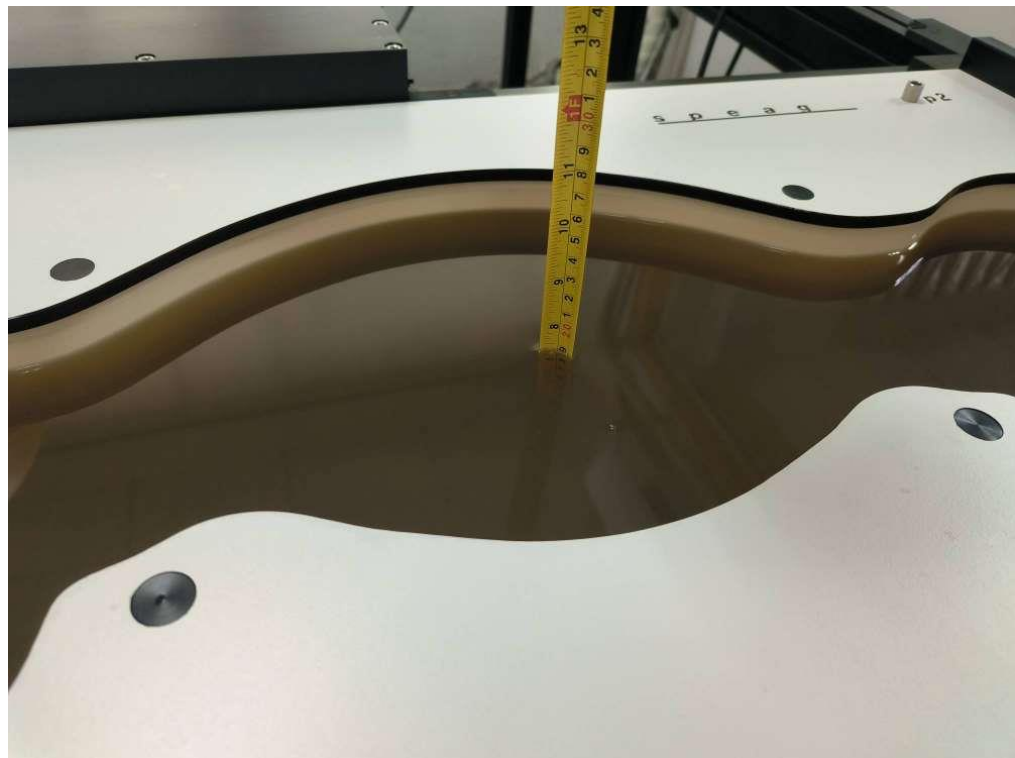
**Table 7.2: Dielectric Performance of Tissue Simulating Liquid**

Measurement Date (yyyy-mm-dd)	Type	Frequency	Permittivity $\epsilon$	Drift (%)	Conductivity $\sigma$ (S/m)	Drift (%)
2023-10-13	Head	750 MHz	42.721	1.86%	0.894	0.45%
2023-10-7	Head	835 MHz	41.894	0.95%	0.945	-2.58%
2023-10-9	Head	1800 MHz	38.934	-2.67%	1.425	1.79%
2023-10-12	Head	1900 MHz	38.879	-2.80%	1.442	3.00%
2023-10-15	Head	2300 MHz	39.313	-0.40%	1.654	-0.96%
2023-10-18	Head	2450 MHz	40.52	3.37%	1.811	0.61%
2023-10-16	Head	2600 MHz	39.351	0.87%	1.934	-1.33%
2023-10-27	Head	5250 MHz	34.865	-2.96%	4.726	0.34%
2023-10-28	Head	5600 MHz	34.754	-2.18%	5.104	0.67%
2023-10-30	Head	5750 MHz	34.45	-2.57%	5.265	0.86%

Note: The liquid temperature is 22.0°C



Picture 7-1 Liquid depth in the Head Phantom

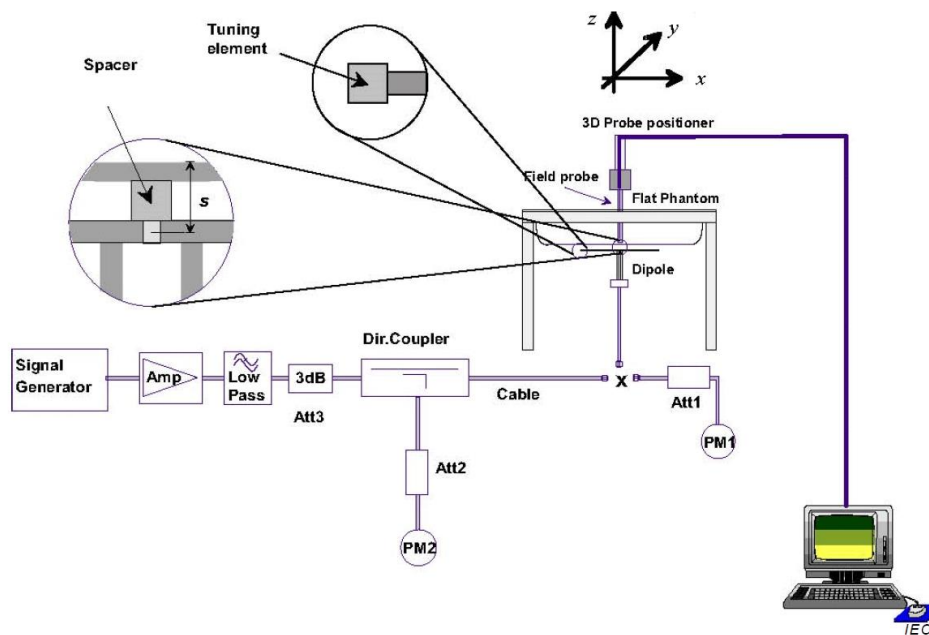


Picture 7-2 Liquid depth in the Head Phantom

## 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
2023-10-13	750 MHz	5.49	8.42	5.64	8.68	2.73%	3.09%
2023-10-7	835 MHz	6.25	9.62	6.28	9.68	0.48%	0.62%
2023-10-9	1800 MHz	19.8	37.9	20.32	38.68	2.63%	2.06%
2023-10-12	1900 MHz	20.7	39.8	20.16	38.84	-2.61%	-2.41%
2023-10-15	2300 MHz	24	49.1	24.44	49.8	1.83%	1.43%
2023-10-18	2450 MHz	24.7	52.1	24.96	52.52	1.05%	0.81%
2023-10-16	2600 MHz	25.1	55.2	25.48	55.76	1.51%	1.01%
2023-10-27	5250 MHz	22.8	79.6	22.4	78.4	-1.75%	-1.51%
2023-10-28	5600 MHz	23.8	83.6	24.1	84.7	1.26%	1.32%
2023-10-30	5750 MHz	22.7	80.5	23.5	83.1	3.52%	3.23%

## 9 Measurement Procedures

### 9.1 Tests to be performed

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

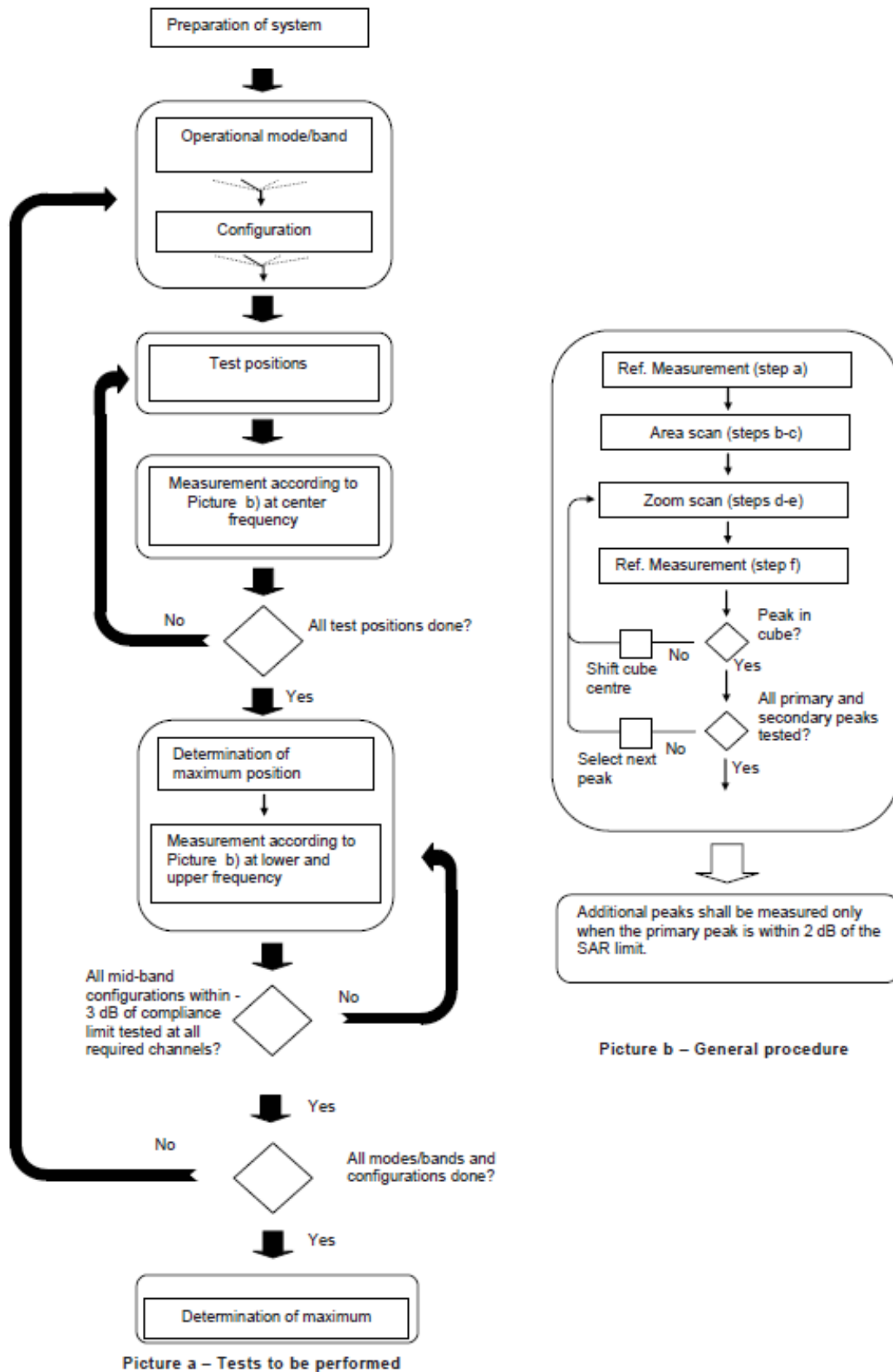
**Step 1:** The tests described in 9.2 shall be performed at the channel that is closest to the centre of the transmit frequency band ( $f_c$ ) for:

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

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

**Step 2:** For the condition providing highest peak spatial-average SAR determined in Step 1, perform all tests described in 9.2 at all other test frequencies, i.e., lowest and highest frequencies. In addition, for all other conditions (device position, configuration and operational mode) where the peak spatial-average SAR value determined in Step 1 is within 3 dB of the applicable SAR limit, it is recommended that all other test frequencies shall be tested as well.

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



Picture 9.1 Block diagram of the tests to be performed

## 9.2 General Measurement Procedure

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

		$\leq 3$ GHz	$> 3$ GHz	
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface		$5 \pm 1$ mm	$\frac{\delta}{2} \cdot \ln(2) \pm 0.5$ mm	
Maximum probe angle from probe axis to phantom surface normal at the measurement location		$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$	
Maximum area scan spatial resolution: $\Delta x_{Area}, \Delta y_{Area}$		$\leq 2$ GHz: $\leq 15$ mm 2 – 3 GHz: $\leq 12$ mm	3 – 4 GHz: $\leq 12$ mm 4 – 6 GHz: $\leq 10$ mm	
		When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.		
Maximum zoom scan spatial resolution: $\Delta x_{Zoom}, \Delta y_{Zoom}$		$\leq 2$ GHz: $\leq 8$ mm 2 – 3 GHz: $\leq 5$ mm*	3 – 4 GHz: $\leq 5$ mm* 4 – 6 GHz: $\leq 4$ mm*	
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	$\leq 5$ mm	3 – 4 GHz: $\leq 4$ mm 4 – 5 GHz: $\leq 3$ mm 5 – 6 GHz: $\leq 2$ mm	
	graded grid	$\Delta z_{Zoom}(1)$ : between 1 <sup>st</sup> two points closest to phantom surface	$\leq 4$ mm	3 – 4 GHz: $\leq 3$ mm 4 – 5 GHz: $\leq 2.5$ mm 5 – 6 GHz: $\leq 2$ mm
		$\Delta z_{Zoom}(n>1)$ : between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z	$\geq 30$ mm	3 – 4 GHz: $\geq 28$ mm 4 – 5 GHz: $\geq 25$ mm 5 – 6 GHz: $\geq 22$ mm	
Note: $\delta$ 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 <i>reported</i> SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is $\leq 1.4$ W/kg, $\leq 8$ mm, $\leq 7$ mm and $\leq 5$ mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

### 9.3 WCDMA Measurement Procedures for SAR

The following procedures are applicable to WCDMA handsets operating under 3GPP Release99, Release 5 and Release 6. The default test configuration is to measure SAR with an established radio link between the DUT and a communication test set using a 12.2kbps RMC (reference measurement channel) configured in Test Loop Mode 1. SAR is selectively confirmed for other physical channel configurations (DPCCH & DPDCH<sub>n</sub>), 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	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c / \beta_d$	$\beta_{hs}$	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	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c / \beta_d$	$\beta_{hs}$	$\beta_{ec}$	$\beta_{ed}$	$\beta_{ed}$ (SF)	$\beta_{ed}$ (codes)	CM (dB)	MPR (dB)	AG Index	E-TFCI
1	11/15	15/15	64	11/15	22/15	209/225	1039/225	4	1	1.5	1.5	20	75
2	6/15	15/15	64	6/15	12/15	12/15	12/15	4	1	1.5	1.5	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}:47/15$ $\beta_{ed2}:47/15$	4	2	1.5	1.5	15	92
4	2/15	15/15	64	2/15	4/15	4/15	56/75	4	1	1.5	1.5	17	71
5	15/15	15/15	64	15/15	24/15	30/15	134/15	4	1	1.5	1.5	21	81

#### Rel.8 DC-HSDPA (Cat 24)

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

## 9.4 SAR Measurement for LTE

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

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

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

### 1) QPSK with 1 RB allocation

Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is  $\leq 0.8$  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

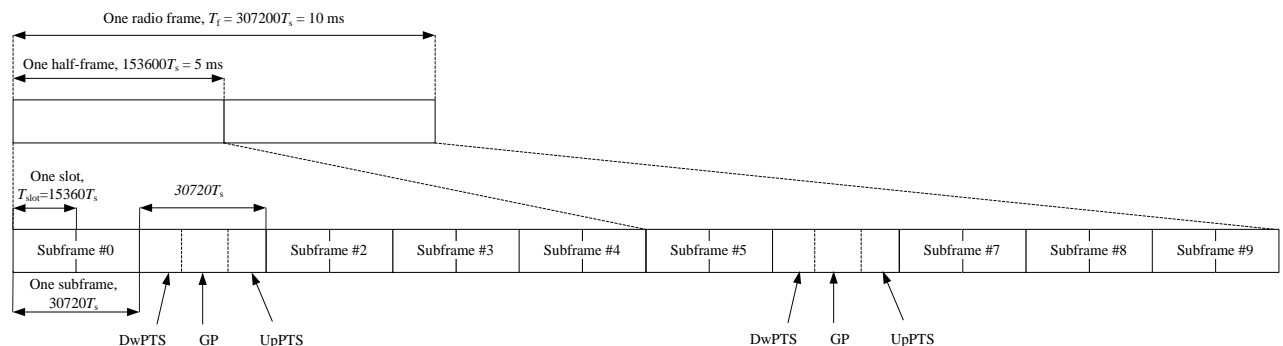
The procedures required for 1 RB allocation in 1) are applied to measure the SAR for QPSK with 50% RB allocation.

### 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  $\leq 0.8$  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	$26336 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$			$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

**Table 9.2: Uplink-downlink configurations**

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

Duty factor is calculated by:

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

## 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 section 14 labeled as: (Power Drift [dB]). This ensures that the power drift during one measurement is within 5%.



## 10 Area Scan Based 1-g SAR

### 10.1 Requirement of KDB

According to the KDB447498 D01, 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  $\leq 1.2$  W/kg, a zoom scan measurement is not required provided it is also not needed for any other purpose; for example, if the peak SAR location required for simultaneous transmission SAR test exclusion can be determined accurately by the SAR system or manually to discriminate between distinctive peaks and scattered noisy SAR distributions from area scans.

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

### 10.2 Fast SAR Algorithms

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

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

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

Both algorithms are implemented in DASYS software.

## 11 Conducted Output Power

**Table11: Summary of Sensor detection mechanism – Main Antenna**

Antenna	Sar sensor off	Sar sensor on
Main Antenna	DSI0	DSI1
WIFI Antenna	DSI0	DSI1

Note: The detail of SAR sensor is presented in Annex I.

### 11.1 WCDMA Measurement result

**Table 11.1-1: The conducted Power for WCDMA B2 - DSI0**

WCDMA1900	FDDII result (dBm)			Tune up
	9538/9938	9400/9800	9262/9662	
	(1907.6MHz)	(1880MHz)	(1852.4MHz)	
	23.06	23.24	23.42	24
HSUPA	21.08	21.16	21.28	22
	21.11	21.18	21.17	22
	20.52	20.53	20.59	21.5
	21.05	21.12	21.16	22
	20.06	20.07	20.07	21.5
HSPA+	20.34	20.31	20.36	22
DC-HSDPA	21.08	21.13	21.22	22
	20.71	20.91	21.02	22
	20.52	20.55	20.62	21.5
	20.53	20.54	20.61	21.5

**Table 11.1-2: The conducted Power for WCDMA B4 - DSI0**

WCDMA1700	FDDIV result (dBm)			Tune up
	1513/1738	1412/1637	1312/1537	
	(1752.6MHz)	(1732.4MHz)	(1712.4MHz)	
	23.75	23.57	23.46	24
HSUPA	21.76	21.84	21.79	22
	21.73	21.77	21.66	22
	21.29	21.19	21.22	22
	21.72	21.73	21.61	22
	20.69	20.74	20.71	21
HSPA+	21.04	20.93	20.94	21.5
DC-HSDPA	21.74	21.74	21.66	22
	21.61	21.59	21.38	22
	21.14	21.16	21.12	21.5
	21.21	21.19	21.13	21.5

**Table 11.1-3: The conducted Power for WCDMA B5 - DSI0**

WCDMA850	FDDV result (dBm)			Tune up
	4233/4458	4183/4408	4132/4357	
	(846.6MHz)	(836.6MHz)	(826.4MHz)	
	23.52	23.45	23.37	24
HSUPA	21.36	21.49	21.39	22
	21.31	21.54	21.46	22
	20.83	20.89	20.88	21.5
	21.43	21.47	21.52	22
	20.28	20.37	20.49	21.5
HSPA+	20.98	20.91	20.93	22
DC-HSDPA	21.36	21.38	21.43	22.5
	21.25	21.23	21.26	22.5
	20.78	20.86	20.77	22
	20.75	20.85	20.89	22

**Table 11.1-4: The conducted Power for WCDMA B2 - DSI1**

WCDMA1900	FDDII result (dBm)			Tune up
	9538/9938	9400/9800	9262/9662	
	(1907.6MHz)	(1880MHz)	(1852.4MHz)	
	14.16	14.22	14.42	15
HSUPA	13.15	13.18	13.26	14
	13.17	13.22	13.34	14
	12.59	12.83	12.81	14
	13.25	13.24	13.32	14
	12.02	12.19	12.35	13
HSPA+	12.72	12.85	13.01	13.5
DC-HSDPA	13.18	13.30	13.41	14
	13.11	13.32	13.36	14
	12.68	12.74	12.85	14
	12.62	12.76	12.91	14

**Table 11.1-5: The conducted Power for WCDMA B4 - DSI1**

WCDMA1700	FDDIV result (dBm)			Tune up
	1513/1738	1412/1637	1312/1537	
	(1752.6MHz)	(1732.4MHz)	(1712.4MHz)	
	12.86	12.81	12.76	13.5
HSUPA	12.54	12.39	12.38	13
	12.51	12.44	12.43	13
	12.04	11.94	11.99	13
	12.52	12.54	12.38	13
	11.55	11.43	11.42	12.5
HSPA+	12.07	11.99	11.93	13
DC-HSDPA	12.36	12.37	12.39	13
	12.39	12.36	12.09	13
	11.95	12.03	11.85	13
	11.95	11.89	11.94	13

**Table 11.1-6: The conducted Power for WCDMA B5 - DSI1**

WCDMA850	FDDV result (dBm)			Tune up
	4233/4458	4183/4408	4132/4357	
	(846.6MHz)	(836.6MHz)	(826.4MHz)	
	15.19	15.17	15.18	16.5
HSUPA	14.78	14.76	14.37	15.5
	14.76	14.82	14.84	15.5
	14.35	14.33	14.37	15.5
	14.83	14.79	14.89	15.5
	13.62	13.74	13.76	14.5
HSPA+	14.26	14.23	14.33	15.5
DC-HSDPA	14.62	14.85	14.81	15.5
	14.63	14.52	14.71	15.5
	14.26	14.23	14.33	15
	14.21	14.27	14.29	15

### 11.3 LTE Measurement result

**Table 11.3-1: Maximum Power Reduction (MPR) for LTE**

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

**Table 11.3-2: The tune up for LTE**

Band	Tune up	
	Sar sensor off	Sar sensor on
	DSI0	DSI1
LTE B7	24	15.5
LTE B12	24.5	19.5
LTE B14	24	18.5
LTE B25	24.5	15
LTE B26	24	18
LTE B30	23.5	14
LTE B41 PC3	24	16
LTE B41 PC2	27	19
LTE B66	24	13

#### LTE B7 – DSI0

LTE B7				
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
5MHz	1RB-High (24)	2567.5 (21425)	23.03	22.30
		2535 (21100)	23.07	22.25
		2502.5 (20775)	23.32	22.49
	1RB-Middle (12)	2567.5 (21425)	23.29	22.50
		2535 (21100)	23.37	22.57
		2502.5 (20775)	23.60	22.74
	1RB-Low (0)	2567.5 (21425)	23.04	22.26
		2535 (21100)	23.11	22.25
		2502.5 (20775)	23.35	22.50
	12RB-High (13)	2567.5 (21425)	22.18	21.13
		2535 (21100)	22.23	21.19
		2502.5 (20775)	22.49	21.42
	12RB-Middle (6)	2567.5 (21425)	22.25	21.23
		2535 (21100)	22.31	21.24
		2502.5 (20775)	22.54	21.48

	12RB-Low (0)	2567.5 (21425)	22.22	21.20	
		2535 (21100)	22.27	21.24	
		2502.5 (20775)	22.49	21.44	
	25RB (0)	2567.5 (21425)	22.21	21.21	
		2535 (21100)	22.25	21.25	
		2502.5 (20775)	22.51	21.48	
10MHz	1RB-High (49)	2565 (21400)	23.08	22.28	
		2535 (21100)	23.13	22.33	
		2505 (20800)	23.33	22.53	
	1RB-Middle (24)	2565 (21400)	23.28	22.45	
		2535 (21100)	23.27	22.51	
		2505 (20800)	23.50	22.71	
	1RB-Low (0)	2565 (21400)	23.17	22.38	
		2535 (21100)	23.21	22.43	
		2505 (20800)	23.41	22.51	
	25RB-High (25)	2565 (21400)	22.20	21.18	
		2535 (21100)	22.29	21.24	
		2505 (20800)	22.51	21.50	
	25RB-Middle (12)	2565 (21400)	22.25	21.24	
		2535 (21100)	22.31	21.26	
		2505 (20800)	22.54	21.48	
	25RB-Low (0)	2565 (21400)	22.30	21.27	
		2535 (21100)	22.34	21.27	
		2505 (20800)	22.52	21.46	
	50RB (0)	2565 (21400)	22.26	21.21	
		2535 (21100)	22.32	21.26	
		2505 (20800)	22.52	21.46	
	15MHz	1RB-High (74)	2562.5 (21375)	23.02	22.23
			2535 (21100)	23.06	22.23
			2507.5 (20825)	23.22	22.47
1RB-Middle (37)		2562.5 (21375)	23.17	22.41	
		2535 (21100)	23.22	22.41	
		2507.5 (20825)	23.41	22.53	
1RB-Low (0)		2562.5 (21375)	23.10	22.41	
		2535 (21100)	23.19	22.44	
		2507.5 (20825)	23.36	22.50	
36RB-High (38)		2562.5 (21375)	22.17	21.12	
		2535 (21100)	22.25	21.17	
		2507.5 (20825)	22.45	21.41	
36RB-Middle (19)		2562.5 (21375)	22.25	21.19	
		2535 (21100)	22.30	21.23	
		2507.5 (20825)	22.48	21.42	

	36RB-Low (0)	2562.5 (21375)	22.25	21.24
		2535 (21100)	22.31	21.22
		2507.5 (20825)	22.48	21.41
	75RB (0)	2562.5 (21375)	22.23	21.19
		2535 (21100)	22.27	21.24
		2507.5 (20825)	22.46	21.42
20MHz	1RB-High (99)	2560 (21350)	22.96	22.27
		2535 (21100)	22.98	22.19
		2510 (20850)	23.13	22.32
	1RB-Middle (50)	2560 (21350)	23.21	22.54
		2535 (21100)	23.26	22.43
		2510 (20850)	23.46	22.54
	1RB-Low (0)	2560 (21350)	23.05	22.23
		2535 (21100)	23.14	22.41
		2510 (20850)	23.29	22.46
	50RB-High (50)	2560 (21350)	22.08	21.09
		2535 (21100)	22.17	21.18
		2510 (20850)	22.38	21.35
	50RB-Middle (25)	2560 (21350)	22.24	21.22
		2535 (21100)	22.30	21.24
		2510 (20850)	22.46	21.42
	50RB-Low (0)	2560 (21350)	22.26	21.22
		2535 (21100)	22.30	21.27
		2510 (20850)	22.42	21.39
	100RB (0)	2560 (21350)	22.18	21.16
		2535 (21100)	22.23	21.20
		2510 (20850)	22.39	21.34

**LTE B7 – DSI1**

LTE B7				
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
5MHz	1RB-High (24)	2567.5 (21425)	14.04	14.32
		2535 (21100)	14.11	14.40
		2502.5 (20775)	14.33	14.56
	1RB-Middle (12)	2567.5 (21425)	14.27	14.64
		2535 (21100)	14.39	14.60
		2502.5 (20775)	14.65	14.80
	1RB-Low (0)	2567.5 (21425)	14.05	14.37
		2535 (21100)	14.14	14.40
		2502.5 (20775)	14.33	14.62
	12RB-High (13)	2567.5 (21425)	14.15	14.13

	12RB-Middle (6)	2535 (21100)	14.23	14.18	
		2502.5 (20775)	14.48	14.47	
		2567.5 (21425)	14.25	14.21	
		2535 (21100)	14.32	14.28	
		2502.5 (20775)	14.57	14.50	
		2567.5 (21425)	14.20	14.18	
	12RB-Low (0)	2535 (21100)	14.29	14.22	
		2502.5 (20775)	14.49	14.49	
		2567.5 (21425)	14.18	14.17	
	25RB (0)	2535 (21100)	14.27	14.26	
		2502.5 (20775)	14.50	14.49	
		2567.5 (21425)	14.16	14.45	
10MHz	1RB-High (49)	2535 (21100)	14.18	14.45	
		2505 (20800)	14.34	14.61	
		2565 (21400)	14.27	14.59	
	1RB-Middle (24)	2535 (21100)	14.35	14.62	
		2505 (20800)	14.55	14.83	
		2565 (21400)	14.15	14.48	
	1RB-Low (0)	2535 (21100)	14.24	14.47	
		2505 (20800)	14.43	14.76	
		2565 (21400)	14.19	14.19	
	25RB-High (25)	2535 (21100)	14.26	14.24	
		2505 (20800)	14.49	14.51	
		2565 (21400)	14.24	14.25	
	25RB-Middle (12)	2535 (21100)	14.31	14.30	
		2505 (20800)	14.49	14.48	
		2565 (21400)	14.28	14.27	
	25RB-Low (0)	2535 (21100)	14.30	14.33	
		2505 (20800)	14.51	14.51	
		2565 (21400)	14.23	14.23	
	50RB (0)	2535 (21100)	14.30	14.28	
		2505 (20800)	14.50	14.51	
		2562.5 (21375)	14.14	14.36	
	15MHz	1RB-High (74)	2535 (21100)	14.09	14.28
			2507.5 (20825)	14.25	14.52
			2562.5 (21375)	14.20	14.38
1RB-Middle (37)		2535 (21100)	14.23	14.56	
		2507.5 (20825)	14.42	14.67	
		2562.5 (21375)	14.14	14.42	
1RB-Low (0)		2535 (21100)	14.23	14.54	
		2507.5 (20825)	14.39	14.58	
		2562.5 (21375)	14.18	14.14	
36RB-High (38)		2562.5 (21375)	14.18	14.14	



	36RB-Middle (19)	2535 (21100)	14.24	14.19
		2507.5 (20825)	14.43	14.37
		2562.5 (21375)	14.22	14.20
		2535 (21100)	14.30	14.24
		2507.5 (20825)	14.46	14.45
		2562.5 (21375)	14.26	14.22
	36RB-Low (0)	2535 (21100)	14.31	14.27
		2507.5 (20825)	14.48	14.44
		2562.5 (21375)	14.20	14.22
	75RB (0)	2535 (21100)	14.27	14.26
		2507.5 (20825)	14.44	14.42
		2562.5 (21375)	14.20	14.22
20MHz	1RB-High (99)	2560 (21350)	14.00	14.21
		2535 (21100)	14.05	14.38
		2510 (20850)	14.19	14.35
	1RB-Middle (50)	2560 (21350)	14.29	14.51
		2535 (21100)	14.31	14.51
		2510 (20850)	14.43	14.69
	1RB-Low (0)	2560 (21350)	14.14	14.43
		2535 (21100)	14.19	14.46
		2510 (20850)	14.34	14.58
	50RB-High (50)	2560 (21350)	14.13	14.10
		2535 (21100)	14.21	14.19
		2510 (20850)	14.39	14.41
	50RB-Middle (25)	2560 (21350)	14.26	14.23
		2535 (21100)	14.29	14.29
		2510 (20850)	14.46	14.44
	50RB-Low (0)	2560 (21350)	14.30	14.26
		2535 (21100)	14.32	14.32
		2510 (20850)	14.43	14.43
	100RB (0)	2560 (21350)	14.22	14.17
		2535 (21100)	14.26	14.24
		2510 (20850)	14.42	14.41

**LTE B12 – DSI0**

LTE B12				
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	715.3 (23173)	23.15	22.23
		707.5 (23095)	23.29	22.21
		699.7 (23017)	23.41	22.46
	1RB-Middle (3)	715.3 (23173)	23.28	22.36
		707.5 (23095)	23.36	22.41

		699.7 (23017)	23.50	22.65
	1RB-Low (0)	715.3 (23173)	23.12	22.25
		707.5 (23095)	23.28	22.30
		699.7 (23017)	23.41	22.53
	3RB-High (3)	715.3 (23173)	23.30	22.11
		707.5 (23095)	23.40	22.16
		699.7 (23017)	23.53	22.33
	3RB-Middle (1)	715.3 (23173)	23.32	22.22
		707.5 (23095)	23.42	22.27
		699.7 (23017)	23.61	22.49
	3RB-Low (0)	715.3 (23173)	23.29	22.16
		707.5 (23095)	23.39	22.19
		699.7 (23017)	23.53	22.44
	6RB (0)	715.3 (23173)	22.25	21.34
		707.5 (23095)	22.38	21.38
		699.7 (23017)	22.50	21.58
3MHz	1RB-High (14)	714.5 (23165)	23.17	22.23
		707.5 (23095)	23.30	22.37
		700.5 (23025)	23.45	22.40
	1RB-Middle (7)	714.5 (23165)	23.41	22.52
		707.5 (23095)	23.49	22.47
		700.5 (23025)	23.61	22.61
	1RB-Low (0)	714.5 (23165)	23.21	22.45
		707.5 (23095)	23.36	22.36
		700.5 (23025)	23.47	22.57
	8RB-High (7)	714.5 (23165)	22.21	21.26
		707.5 (23095)	22.33	21.33
		700.5 (23025)	22.48	21.48
	8RB-Middle (4)	714.5 (23165)	22.28	21.35
		707.5 (23095)	22.39	21.37
		700.5 (23025)	22.53	21.54
	8RB-Low (0)	714.5 (23165)	22.24	21.34
		707.5 (23095)	22.36	21.37
		700.5 (23025)	22.48	21.51
15RB (0)	714.5 (23165)	22.28	21.28	
	707.5 (23095)	22.38	21.33	
	700.5 (23025)	22.51	21.48	
5MHz	1RB-High (24)	713.5 (23155)	23.09	22.17
		707.5 (23095)	23.12	22.29
		701.5 (23035)	23.28	22.28
	1RB-Middle (12)	713.5 (23155)	23.39	22.55
		707.5 (23095)	23.52	22.53

		701.5 (23035)	23.63	22.60
	1RB-Low (0)	713.5 (23155)	23.18	22.23
		707.5 (23095)	23.26	22.22
		701.5 (23035)	23.35	22.54
	12RB-High (13)	713.5 (23155)	22.24	21.22
		707.5 (23095)	22.30	21.27
		701.5 (23035)	22.41	21.37
	12RB-Middle (6)	713.5 (23155)	22.33	21.34
		707.5 (23095)	22.40	21.34
		701.5 (23035)	22.52	21.44
	12RB-Low (0)	713.5 (23155)	22.26	21.26
		707.5 (23095)	22.39	21.31
		701.5 (23035)	22.47	21.47
	25RB (0)	713.5 (23155)	22.27	21.29
		707.5 (23095)	22.37	21.34
		701.5 (23035)	22.47	21.40
10MHz	1RB-High (49)	711 (23130)	23.14	22.26
		707.5 (23095)	23.20	22.39
		704 (23060)	23.26	22.24
	1RB-Middle (24)	711 (23130)	23.39	22.49
		707.5 (23095)	23.39	22.42
		704 (23060)	23.52	22.48
	1RB-Low (0)	711 (23130)	23.34	22.39
		707.5 (23095)	23.42	22.36
		704 (23060)	23.47	22.53
	25RB-High (25)	711 (23130)	22.34	21.34
		707.5 (23095)	22.40	21.38
		704 (23060)	22.44	21.38
	25RB-Middle (12)	711 (23130)	22.39	21.38
		707.5 (23095)	22.45	21.39
		704 (23060)	22.52	21.43
	25RB-Low (0)	711 (23130)	22.43	21.40
		707.5 (23095)	22.48	21.44
		704 (23060)	22.53	21.45
	50RB (0)	711 (23130)	22.40	21.40
		707.5 (23095)	22.45	21.41
		704 (23060)	22.47	21.43

## LTE B12 – DSI1

LTE B12					
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	
1.4MHz	1RB-High (5)	715.3 (23173)	18.18	18.4	
		707.5 (23095)	18.26	18.46	
		699.7 (23017)	18.45	18.74	
	1RB-Middle (3)	715.3 (23173)	18.31	18.58	
		707.5 (23095)	18.44	18.66	
		699.7 (23017)	18.52	18.89	
	1RB-Low (0)	715.3 (23173)	18.19	18.43	
		707.5 (23095)	18.3	18.61	
		699.7 (23017)	18.46	18.79	
	3RB-High (3)	715.3 (23173)	18.27	18.32	
		707.5 (23095)	18.44	18.35	
		699.7 (23017)	18.53	18.59	
	3RB-Middle (1)	715.3 (23173)	18.34	18.33	
		707.5 (23095)	18.44	18.45	
		699.7 (23017)	18.59	18.65	
	3RB-Low (0)	715.3 (23173)	18.3	18.28	
		707.5 (23095)	18.4	18.41	
		699.7 (23017)	18.54	18.58	
	6RB (0)	715.3 (23173)	18.29	18.35	
		707.5 (23095)	18.39	18.48	
		699.7 (23017)	18.54	18.61	
	3MHz	1RB-High (14)	714.5 (23165)	18.23	18.49
			707.5 (23095)	18.35	18.62
			700.5 (23025)	18.48	18.76
		1RB-Middle (7)	714.5 (23165)	18.42	18.74
			707.5 (23095)	18.55	18.78
			700.5 (23025)	18.67	19.02
1RB-Low (0)		714.5 (23165)	18.29	18.54	
		707.5 (23095)	18.4	18.68	
		700.5 (23025)	18.52	18.82	
8RB-High (7)		714.5 (23165)	18.27	18.37	
		707.5 (23095)	18.38	18.44	
		700.5 (23025)	18.52	18.59	
8RB-Middle (4)		714.5 (23165)	18.34	18.41	
		707.5 (23095)	18.42	18.5	
		700.5 (23025)	18.56	18.63	
8RB-Low (0)		714.5 (23165)	18.31	18.39	
		707.5 (23095)	18.4	18.48	

		700.5 (23025)	18.54	18.61
	15RB (0)	714.5 (23165)	18.27	18.3
		707.5 (23095)	18.39	18.41
		700.5 (23025)	18.51	18.53
5MHz	1RB-High (24)	713.5 (23155)	18.12	18.47
		707.5 (23095)	18.23	18.52
		701.5 (23035)	18.31	18.5
	1RB-Middle (12)	713.5 (23155)	18.41	18.7
		707.5 (23095)	18.5	18.83
		701.5 (23035)	18.68	18.83
	1RB-Low (0)	713.5 (23155)	18.23	18.6
		707.5 (23095)	18.33	18.55
		701.5 (23035)	18.45	18.69
	12RB-High (13)	713.5 (23155)	18.25	18.29
		707.5 (23095)	18.38	18.37
		701.5 (23035)	18.51	18.49
	12RB-Middle (6)	713.5 (23155)	18.36	18.37
		707.5 (23095)	18.45	18.44
		701.5 (23035)	18.57	18.56
	12RB-Low (0)	713.5 (23155)	18.34	18.32
		707.5 (23095)	18.44	18.42
		701.5 (23035)	18.5	18.49
	25RB (0)	713.5 (23155)	18.3	18.3
		707.5 (23095)	18.4	18.41
		701.5 (23035)	18.51	18.5
10MHz	1RB-High (49)	711 (23130)	18.16	18.46
		707.5 (23095)	18.23	18.59
		704 (23060)	18.28	18.55
	1RB-Middle (24)	711 (23130)	18.53	18.77
		707.5 (23095)	18.47	18.84
		704 (23060)	18.51	18.87
	1RB-Low (0)	711 (23130)	18.38	18.69
		707.5 (23095)	18.44	18.71
		704 (23060)	18.52	18.82
	25RB-High (25)	711 (23130)	18.33	18.35
		707.5 (23095)	18.38	18.39
		704 (23060)	18.43	18.46
	25RB-Middle (12)	711 (23130)	18.38	18.4
		707.5 (23095)	18.53	18.47
		704 (23060)	18.50	18.51
	25RB-Low (0)	711 (23130)	18.45	18.47
		707.5 (23095)	18.48	18.48

		704 (23060)	18.48	18.48
	50RB (0)	711 (23130)	18.39	18.41
		707.5 (23095)	18.44	18.44
		704 (23060)	18.46	18.48

**LTE B14 – DSI0**

LTE B14				
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
5MHz	1RB-High (24)	795.5 (23355)	22.68	21.85
		793 (23330)	22.73	21.91
		790.5 (23305)	22.77	21.93
	1RB-Middle (12)	795.5 (23355)	22.98	22.25
		793 (23330)	23.03	22.21
		790.5 (23305)	23.07	22.34
	1RB-Low (0)	795.5 (23355)	22.80	22.00
		793 (23330)	22.83	21.96
		790.5 (23305)	22.88	22.14
	12RB-High (13)	795.5 (23355)	21.80	20.77
		793 (23330)	21.83	20.79
		790.5 (23305)	21.90	20.86
	12RB-Middle (6)	795.5 (23355)	21.93	20.85
		793 (23330)	21.96	20.94
		790.5 (23305)	22.02	20.99
	12RB-Low (0)	795.5 (23355)	21.92	20.88
		793 (23330)	21.97	20.92
		790.5 (23305)	21.99	20.95
25RB (0)	795.5 (23355)	21.88	20.84	
	793 (23330)	21.92	20.89	
	790.5 (23305)	21.96	20.94	
10MHz	1RB-High (49)	793 (23330)	22.78	21.92
	1RB-Middle (24)	793 (23330)	22.78	21.94
	1RB-Low (0)	793 (23330)	22.79	21.85
	25RB-High (25)	793 (23330)	21.99	20.98
	25RB-Middle (12)	793 (23330)	22.01	20.97
	25RB-Low (0)	793 (23330)	22.01	20.95
	50RB (0)	793 (23330)	21.99	20.94

## LTE B14 – DS11

LTE B14				
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
5MHz	1RB-High (24)	795.5 (23355)	17.67	17.91
		793 (23330)	17.67	17.87
		790.5 (23305)	17.64	17.88
	1RB-Middle (12)	795.5 (23355)	17.89	18.19
		793 (23330)	17.87	18.11
		790.5 (23305)	17.88	18.21
	1RB-Low (0)	795.5 (23355)	17.91	18.25
		793 (23330)	17.87	18.14
		790.5 (23305)	17.91	18.24
	12RB-High (13)	795.5 (23355)	17.79	17.76
		793 (23330)	17.75	17.76
		790.5 (23305)	17.78	17.75
	12RB-Middle (6)	795.5 (23355)	17.88	17.86
		793 (23330)	17.89	17.86
		790.5 (23305)	17.91	17.89
	12RB-Low (0)	795.5 (23355)	17.97	17.93
		793 (23330)	17.94	17.92
		790.5 (23305)	17.95	17.94
	25RB (0)	795.5 (23355)	17.88	17.86
		793 (23330)	17.87	17.86
		790.5 (23305)	17.87	17.86
10MHz	1RB-High (49)	793 (23330)	17.49	17.98
	1RB-Middle (24)	793 (23330)	17.66	17.91
	1RB-Low (0)	793 (23330)	17.51	17.83
	25RB-High (25)	793 (23330)	17.98	18.05
	25RB-Middle (12)	793 (23330)	17.75	17.95
	25RB-Low (0)	793 (23330)	17.68	18.25
	50RB (0)	793 (23330)	17.71	18.08

## LTE B25 – DSI0

LTE B25					
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	
1.4MHz	1RB-High (5)	1914.3 (26683)	23.38	22.60	
		1882.5 (26365)	23.46	22.61	
		1850.7 (26047)	23.43	22.72	
	1RB-Middle (3)	1914.3 (26683)	23.55	22.64	
		1882.5 (26365)	23.59	22.85	
		1850.7 (26047)	23.57	22.78	
	1RB-Low (0)	1914.3 (26683)	23.38	22.58	
		1882.5 (26365)	23.48	22.59	
		1850.7 (26047)	23.45	22.63	
	3RB-High (3)	1914.3 (26683)	23.55	22.10	
		1882.5 (26365)	23.57	22.58	
		1850.7 (26047)	23.53	22.42	
	3RB-Middle (1)	1914.3 (26683)	23.57	22.43	
		1882.5 (26365)	23.62	22.50	
		1850.7 (26047)	23.62	22.40	
	3RB-Low (0)	1914.3 (26683)	23.54	22.09	
		1882.5 (26365)	23.57	22.47	
		1850.7 (26047)	23.55	22.40	
	6RB (0)	1914.3 (26683)	22.53	21.26	
		1882.5 (26365)	22.57	21.65	
		1850.7 (26047)	22.53	21.55	
	3MHz	1RB-High (14)	1913.5 (26675)	23.48	22.68
			1882.5 (26365)	23.50	22.78
			1851.5 (26055)	23.51	22.66
1RB-Middle (7)		1913.5 (26675)	23.67	22.76	
		1882.5 (26365)	23.69	22.92	
		1851.5 (26055)	23.70	22.82	
1RB-Low (0)		1913.5 (26675)	23.44	22.79	
		1882.5 (26365)	23.53	22.72	
		1851.5 (26055)	23.49	22.79	
8RB-High (7)		1913.5 (26675)	22.48	21.52	
		1882.5 (26365)	22.54	21.61	
		1851.5 (26055)	22.48	21.54	
8RB-Middle (4)		1913.5 (26675)	22.53	21.60	
		1882.5 (26365)	22.58	21.60	
		1851.5 (26055)	22.55	21.59	
8RB-Low (0)		1913.5 (26675)	22.50	21.52	
		1882.5 (26365)	22.56	21.59	



		1851.5 (26055)	22.53	21.58
	15RB (0)	1913.5 (26675)	22.52	21.50
		1882.5 (26365)	22.55	21.54
		1851.5 (26055)	22.51	21.51
5MHz	1RB-High (24)	1912.5 (26665)	23.33	22.58
		1882.5 (26365)	23.42	22.73
		1852.5 (26065)	23.39	22.61
	1RB-Middle (12)	1912.5 (26665)	23.68	22.77
		1882.5 (26365)	23.68	22.89
		1852.5 (26065)	23.62	22.77
	1RB-Low (0)	1912.5 (26665)	23.35	22.52
		1882.5 (26365)	23.44	22.62
		1852.5 (26065)	23.41	22.65
	12RB-High (13)	1912.5 (26665)	22.45	21.42
		1882.5 (26365)	22.55	21.53
		1852.5 (26065)	22.53	21.48
	12RB-Middle (6)	1912.5 (26665)	22.55	21.49
		1882.5 (26365)	22.62	21.57
		1852.5 (26065)	22.60	21.56
	12RB-Low (0)	1912.5 (26665)	22.54	21.44
		1882.5 (26365)	22.59	21.54
		1852.5 (26065)	22.52	21.50
	25RB (0)	1912.5 (26665)	22.50	21.49
		1882.5 (26365)	22.59	21.56
		1852.5 (26065)	22.54	21.52
10MHz	1RB-High (49)	1910 (26640)	23.46	22.72
		1882.5 (26365)	22.97	22.76
		1855 (26090)	23.48	22.69
	1RB-Middle (24)	1910 (26640)	23.57	22.82
		1882.5 (26365)	23.14	22.82
		1855 (26090)	23.65	22.77
	1RB-Low (0)	1910 (26640)	23.43	22.73
		1882.5 (26365)	23.03	22.76
		1855 (26090)	23.49	22.76
	25RB-High (25)	1910 (26640)	22.37	21.52
		1882.5 (26365)	22.44	21.58
		1855 (26090)	22.60	21.56
	25RB-Middle (12)	1910 (26640)	22.41	21.55
		1882.5 (26365)	22.36	21.61
		1855 (26090)	22.59	21.59
	25RB-Low (0)	1910 (26640)	22.27	21.56
		1882.5 (26365)	22.59	21.66

		1855 (26090)	22.59	21.56
	50RB (0)	1910 (26640)	22.21	21.54
		1882.5 (26365)	22.67	21.65
		1855 (26090)	22.62	21.57
15MHz	1RB-High (74)	1907.5 (26615)	23.41	22.27
		1882.5 (26365)	23.36	22.24
		1857.5 (26115)	22.94	22.20
	1RB-Middle (37)	1907.5 (26615)	23.50	22.28
		1882.5 (26365)	23.42	22.37
		1857.5 (26115)	23.01	22.37
	1RB-Low (0)	1907.5 (26615)	23.42	22.14
		1882.5 (26365)	23.11	22.26
		1857.5 (26115)	22.96	22.22
	36RB-High (38)	1907.5 (26615)	22.51	20.95
		1882.5 (26365)	22.12	21.04
		1857.5 (26115)	22.09	21.01
	36RB-Middle (19)	1907.5 (26615)	22.53	20.98
		1882.5 (26365)	22.32	21.07
		1857.5 (26115)	22.07	21.04
	36RB-Low (0)	1907.5 (26615)	22.56	21.04
		1882.5 (26365)	22.40	21.11
		1857.5 (26115)	22.05	21.02
75RB (0)	1907.5 (26615)	22.53	21.03	
	1882.5 (26365)	22.28	21.07	
	1857.5 (26115)	22.07	21.09	
20MHz	1RB-High (99)	1905 (26590)	23.28	22.55
		1882.5 (26365)	23.34	22.65
		1860 (26140)	23.35	22.62
	1RB-Middle (50)	1905 (26590)	23.41	22.79
		1882.5 (26365)	23.57	22.94
		1860 (26140)	23.56	22.76
	1RB-Low (0)	1905 (26590)	23.30	22.65
		1882.5 (26365)	23.40	22.71
		1860 (26140)	23.38	22.62
	50RB-High (50)	1905 (26590)	22.38	21.40
		1882.5 (26365)	22.52	21.55
		1860 (26140)	22.53	21.56
	50RB-Middle (25)	1905 (26590)	22.46	21.51
		1882.5 (26365)	22.59	21.59
		1860 (26140)	22.56	21.57
	50RB-Low (0)	1905 (26590)	22.54	21.58
		1882.5 (26365)	22.62	21.64

		1860 (26140)	22.58	21.51
	100RB (0)	1905 (26590)	22.46	21.47
		1882.5 (26365)	22.56	21.56
		1860 (26140)	22.53	21.50

**LTE B25 – DS11**

LTE B25				
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	1914.3 (26683)	13.59	13.85
		1882.5 (26365)	13.80	13.79
		1850.7 (26047)	13.89	14.16
	1RB-Middle (3)	1914.3 (26683)	13.93	14.04
		1882.5 (26365)	14.11	14.19
		1850.7 (26047)	14.13	14.26
	1RB-Low (0)	1914.3 (26683)	13.77	13.96
		1882.5 (26365)	13.91	13.79
		1850.7 (26047)	13.63	14.21
	3RB-High (3)	1914.3 (26683)	13.97	13.88
		1882.5 (26365)	13.97	13.99
		1850.7 (26047)	13.87	13.78
	3RB-Middle (1)	1914.3 (26683)	13.79	13.83
		1882.5 (26365)	13.97	13.81
		1850.7 (26047)	13.81	13.72
	3RB-Low (0)	1914.3 (26683)	14.15	14.03
		1882.5 (26365)	14.02	13.99
		1850.7 (26047)	13.96	13.74
	6RB (0)	1914.3 (26683)	13.82	13.73
		1882.5 (26365)	14.01	13.98
		1850.7 (26047)	14.05	13.85
3MHz	1RB-High (14)	1913.5 (26675)	13.65	14.05
		1882.5 (26365)	13.70	14.07
		1851.5 (26055)	13.72	13.98
	1RB-Middle (7)	1913.5 (26675)	13.92	14.22
		1882.5 (26365)	13.87	14.05
		1851.5 (26055)	14.00	14.07
	1RB-Low (0)	1913.5 (26675)	13.78	14.25
		1882.5 (26365)	13.75	13.84
		1851.5 (26055)	13.92	14.07
8RB-High (7)	1913.5 (26675)	13.83	13.65	
	1882.5 (26365)	13.83	13.96	
	1851.5 (26055)	13.80	13.97	

	8RB-Middle (4)	1913.5 (26675)	13.93	13.79	
		1882.5 (26365)	13.80	13.97	
		1851.5 (26055)	13.82	13.92	
	8RB-Low (0)	1913.5 (26675)	13.97	13.85	
		1882.5 (26365)	13.89	13.83	
		1851.5 (26055)	14.05	13.73	
	15RB (0)	1913.5 (26675)	14.02	13.77	
		1882.5 (26365)	14.08	13.90	
		1851.5 (26055)	13.82	13.79	
5MHz	1RB-High (24)	1912.5 (26665)	13.93	14.07	
		1882.5 (26365)	13.75	13.81	
		1852.5 (26065)	13.92	14.09	
	1RB-Middle (12)	1912.5 (26665)	13.73	14.09	
		1882.5 (26365)	14.02	14.11	
		1852.5 (26065)	14.10	13.96	
	1RB-Low (0)	1912.5 (26665)	13.57	14.20	
		1882.5 (26365)	13.70	13.91	
		1852.5 (26065)	13.94	14.19	
	12RB-High (13)	1912.5 (26665)	13.69	13.69	
		1882.5 (26365)	13.98	13.78	
		1852.5 (26065)	13.88	13.71	
	12RB-Middle (6)	1912.5 (26665)	14.06	13.94	
		1882.5 (26365)	13.80	14.09	
		1852.5 (26065)	13.95	13.78	
	12RB-Low (0)	1912.5 (26665)	13.81	14.12	
		1882.5 (26365)	14.02	13.88	
		1852.5 (26065)	13.87	13.80	
	25RB (0)	1912.5 (26665)	13.89	13.69	
		1882.5 (26365)	14.06	14.05	
		1852.5 (26065)	14.01	14.00	
	10MHz	1RB-High (49)	1910 (26640)	13.71	14.04
			1882.5 (26365)	13.61	14.01
			1855 (26090)	13.64	14.05
1RB-Middle (24)		1910 (26640)	14.07	14.05	
		1882.5 (26365)	13.89	14.12	
		1855 (26090)	14.02	14.14	
1RB-Low (0)		1910 (26640)	13.64	14.12	
		1882.5 (26365)	13.67	13.98	
		1855 (26090)	13.91	14.02	
25RB-High (25)		1910 (26640)	13.81	13.64	
		1882.5 (26365)	13.82	14.04	
		1855 (26090)	13.78	13.81	

	25RB-Middle (12)	1910 (26640)	13.88	14.00	
		1882.5 (26365)	13.90	14.11	
		1855 (26090)	13.94	13.73	
	25RB-Low (0)	1910 (26640)	14.07	14.04	
		1882.5 (26365)	14.16	13.87	
		1855 (26090)	13.84	14.05	
	50RB (0)	1910 (26640)	13.72	13.90	
		1882.5 (26365)	14.06	13.85	
		1855 (26090)	13.86	13.67	
15MHz	1RB-High (74)	1907.5 (26615)	13.84	13.97	
		1882.5 (26365)	13.88	14.09	
		1857.5 (26115)	13.91	14.07	
	1RB-Middle (37)	1907.5 (26615)	13.97	14.03	
		1882.5 (26365)	14.06	14.13	
		1857.5 (26115)	14.04	14.26	
	1RB-Low (0)	1907.5 (26615)	13.85	13.97	
		1882.5 (26365)	13.88	13.95	
		1857.5 (26115)	13.78	14.13	
	36RB-High (38)	1907.5 (26615)	13.64	13.64	
		1882.5 (26365)	13.85	14.00	
		1857.5 (26115)	13.95	13.93	
	36RB-Middle (19)	1907.5 (26615)	13.82	13.83	
		1882.5 (26365)	13.92	14.07	
		1857.5 (26115)	14.00	13.73	
	36RB-Low (0)	1907.5 (26615)	13.87	13.88	
		1882.5 (26365)	14.06	14.09	
		1857.5 (26115)	13.78	14.03	
	75RB (0)	1907.5 (26615)	13.98	13.84	
		1882.5 (26365)	14.01	13.80	
		1857.5 (26115)	14.01	13.81	
	20MHz	1RB-High (99)	1905 (26590)	13.78	14.05
			1882.5 (26365)	13.74	13.94
			1860 (26140)	13.77	14.10
		1RB-Middle (50)	1905 (26590)	13.92	14.09
			1882.5 (26365)	14.03	14.18
			1860 (26140)	14.02	14.16
1RB-Low (0)		1905 (26590)	13.77	14.12	
		1882.5 (26365)	13.83	13.99	
		1860 (26140)	13.79	14.08	
50RB-High (50)		1905 (26590)	13.83	13.81	
		1882.5 (26365)	13.93	13.91	
		1860 (26140)	13.91	13.91	

	50RB-Middle (25)	1905 (26590)	13.92	13.91
		1882.5 (26365)	13.98	13.97
		1860 (26140)	13.96	13.91
	50RB-Low (0)	1905 (26590)	14.00	13.99
		1882.5 (26365)	14.02	13.99
		1860 (26140)	13.90	13.90
	100RB (0)	1905 (26590)	13.92	13.88
		1882.5 (26365)	13.95	13.94
		1860 (26140)	13.90	13.87

**LTE B26 – DSI0**

LTE B26				
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	848.3 (27033)	22.61	21.87
		831.5 (26865)	22.79	21.98
		814.7 (26697)	23.01	22.18
	1RB-Middle (3)	848.3 (27033)	22.69	22.02
		831.5 (26865)	22.91	22.13
		814.7 (26697)	23.13	22.27
	1RB-Low (0)	848.3 (27033)	22.61	21.81
		831.5 (26865)	22.77	22.03
		814.7 (26697)	23.04	22.10
	3RB-High (3)	848.3 (27033)	22.68	21.70
		831.5 (26865)	22.87	21.79
		814.7 (26697)	23.14	22.04
	3RB-Middle (1)	848.3 (27033)	22.77	21.76
		831.5 (26865)	22.94	21.93
		814.7 (26697)	23.23	22.05
	3RB-Low (0)	848.3 (27033)	22.71	21.74
		831.5 (26865)	22.87	21.82
		814.7 (26697)	23.15	22.08
	6RB (0)	848.3 (27033)	21.78	20.85
		831.5 (26865)	21.95	21.01
		814.7 (26697)	22.22	21.17
3MHz	1RB-High (14)	847.5 (27025)	22.62	21.83
		831.5 (26865)	22.77	22.07
		815.5 (26705)	22.66	21.93
	1RB-Middle (7)	847.5 (27025)	22.83	22.02
		831.5 (26865)	22.98	22.13
		815.5 (26705)	22.81	22.05
	1RB-Low (0)	847.5 (27025)	22.64	21.82

	8RB-High (7)	831.5 (26865)	22.81	21.96	
		815.5 (26705)	22.61	21.88	
		847.5 (27025)	21.71	20.79	
	8RB-Middle (4)	831.5 (26865)	21.87	20.87	
		815.5 (26705)	21.63	20.70	
		847.5 (27025)	21.78	20.82	
	8RB-Low (0)	831.5 (26865)	21.93	20.93	
		815.5 (26705)	21.69	20.70	
		847.5 (27025)	21.73	20.79	
	15RB (0)	831.5 (26865)	21.89	20.92	
		815.5 (26705)	21.63	20.70	
		847.5 (27025)	21.75	20.73	
	5MHz	1RB-High (24)	831.5 (26865)	21.91	20.87
			815.5 (26705)	21.63	20.60
			846.5 (27015)	22.51	21.81
1RB-Middle (12)		831.5 (26865)	22.68	21.82	
		816.5 (26715)	22.88	22.07	
		846.5 (27015)	22.89	22.13	
1RB-Low (0)		831.5 (26865)	23.01	22.27	
		816.5 (26715)	23.25	22.37	
		846.5 (27015)	22.56	21.86	
12RB-High (13)		831.5 (26865)	22.70	21.93	
		816.5 (26715)	22.96	22.06	
		846.5 (27015)	21.71	20.68	
12RB-Middle (6)		831.5 (26865)	21.85	20.81	
		816.5 (26715)	22.11	21.04	
		846.5 (27015)	21.80	20.78	
12RB-Low (0)		831.5 (26865)	21.94	20.93	
		816.5 (26715)	22.19	21.09	
		846.5 (27015)	21.80	20.76	
25RB (0)		831.5 (26865)	21.94	20.88	
		816.5 (26715)	22.12	21.04	
		846.5 (27015)	21.78	20.75	
10MHz		1RB-High (49)	831.5 (26865)	21.78	20.75
			816.5 (26715)	21.91	20.88
			844 (26990)	22.63	21.84
	1RB-Middle (24)	831.5 (26865)	22.74	22.09	
		820 (26750)	22.93	22.10	
		844 (26990)	22.81	21.95	
	1RB-Low (0)	831.5 (26865)	22.95	22.21	
		820 (26750)	23.13	22.43	
		844 (26990)	22.78	22.06	

	25RB-High (25)	831.5 (26865)	22.90	22.13	
		820 (26750)	23.07	22.16	
		844 (26990)	21.74	20.73	
	25RB-Middle (12)	831.5 (26865)	21.93	20.91	
		820 (26750)	22.13	21.11	
		844 (26990)	21.88	20.82	
	25RB-Low (0)	831.5 (26865)	22.00	20.95	
		820 (26750)	22.18	21.16	
		844 (26990)	21.91	20.91	
	50RB (0)	831.5 (26865)	22.02	20.99	
		820 (26750)	22.20	21.17	
		844 (26990)	21.84	20.83	
	15MHz	1RB-High (74)	831.5 (26865)	21.99	20.94
			820 (26750)	22.18	21.14
			841.5 (26965)	22.65	21.81
1RB-Middle (37)		831.5 (26865)	22.73	22.03	
		822.5 (26775)	22.83	21.97	
		841.5 (26965)	22.85	22.10	
1RB-Low (0)		831.5 (26865)	22.92	22.03	
		822.5 (26775)	23.06	22.23	
		841.5 (26965)	22.83	22.14	
36RB-High (38)		831.5 (26865)	22.93	22.20	
		822.5 (26775)	23.07	22.24	
		841.5 (26965)	21.82	20.75	
36RB-Middle (19)		831.5 (26865)	21.98	20.89	
		822.5 (26775)	22.08	21.01	
		841.5 (26965)	21.93	20.88	
36RB-Low (0)		831.5 (26865)	22.05	20.95	
		822.5 (26775)	22.15	21.08	
		841.5 (26965)	21.99	20.91	
75RB (0)		831.5 (26865)	22.08	20.98	
		822.5 (26775)	22.19	21.11	
		841.5 (26965)	21.89	20.83	
			831.5 (26865)	22.04	20.94
			822.5 (26775)	22.14	21.08



## LTE B26 – DS11

LTE B26					
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	
1.4MHz	1RB-High (5)	848.3 (27033)	16.73	16.84	
		831.5 (26865)	16.80	16.82	
		814.7 (26697)	16.83	16.97	
	1RB-Middle (3)	848.3 (27033)	16.78	16.97	
		831.5 (26865)	17.01	17.16	
		814.7 (26697)	17.18	17.18	
	1RB-Low (0)	848.3 (27033)	16.67	17.12	
		831.5 (26865)	16.99	17.05	
		814.7 (26697)	17.08	17.39	
	3RB-High (3)	848.3 (27033)	16.57	16.71	
		831.5 (26865)	16.96	16.87	
		814.7 (26697)	16.87	16.92	
	3RB-Middle (1)	848.3 (27033)	16.74	16.82	
		831.5 (26865)	17.10	16.77	
		814.7 (26697)	17.01	17.18	
	3RB-Low (0)	848.3 (27033)	16.82	16.69	
		831.5 (26865)	16.84	16.95	
		814.7 (26697)	17.11	17.07	
	6RB (0)	848.3 (27033)	16.80	16.86	
		831.5 (26865)	17.00	17.01	
		814.7 (26697)	17.18	16.91	
	3MHz	1RB-High (14)	847.5 (27025)	16.75	16.85
			831.5 (26865)	16.79	17.07
			815.5 (26705)	16.89	17.21
		1RB-Middle (7)	847.5 (27025)	16.89	16.87
			831.5 (26865)	16.73	17.17
			815.5 (26705)	17.13	17.14
1RB-Low (0)		847.5 (27025)	16.71	17.11	
		831.5 (26865)	16.78	17.09	
		815.5 (26705)	17.06	17.29	
8RB-High (7)		847.5 (27025)	16.80	16.85	
		831.5 (26865)	16.81	16.66	
		815.5 (26705)	16.82	16.90	
8RB-Middle (4)		847.5 (27025)	16.93	16.91	
		831.5 (26865)	17.00	16.92	
		815.5 (26705)	16.90	16.97	
8RB-Low (0)		847.5 (27025)	16.93	16.99	
		831.5 (26865)	16.91	16.77	

		815.5 (26705)	17.14	17.09	
	15RB (0)	847.5 (27025)	16.82	16.74	
		831.5 (26865)	16.87	16.90	
		815.5 (26705)	17.05	17.12	
5MHz	1RB-High (24)	846.5 (27015)	16.63	16.94	
		831.5 (26865)	16.89	17.02	
		816.5 (26715)	16.91	17.10	
	1RB-Middle (12)	846.5 (27015)	16.74	16.94	
		831.5 (26865)	16.96	17.04	
		816.5 (26715)	17.19	17.38	
	1RB-Low (0)	846.5 (27015)	16.74	17.06	
		831.5 (26865)	16.87	17.07	
		816.5 (26715)	16.89	17.26	
	12RB-High (13)	846.5 (27015)	16.66	16.63	
		831.5 (26865)	16.99	16.88	
		816.5 (26715)	16.89	16.85	
	12RB-Middle (6)	846.5 (27015)	16.76	16.97	
		831.5 (26865)	16.81	17.08	
		816.5 (26715)	17.16	17.13	
	12RB-Low (0)	846.5 (27015)	16.77	16.90	
		831.5 (26865)	17.15	16.91	
		816.5 (26715)	17.01	17.06	
	25RB (0)	846.5 (27015)	16.69	16.86	
		831.5 (26865)	16.86	16.77	
		816.5 (26715)	17.15	17.14	
	10MHz	1RB-High (49)	844 (26990)	16.66	16.82
			831.5 (26865)	16.79	16.93
			820 (26750)	16.89	17.03
1RB-Middle (24)		844 (26990)	16.78	17.13	
		831.5 (26865)	16.95	17.01	
		820 (26750)	17.13	17.22	
1RB-Low (0)		844 (26990)	16.84	17.03	
		831.5 (26865)	16.91	17.18	
		820 (26750)	16.90	17.34	
25RB-High (25)		844 (26990)	16.88	16.84	
		831.5 (26865)	17.03	16.89	
		820 (26750)	17.04	17.05	
25RB-Middle (12)		844 (26990)	16.83	16.91	
		831.5 (26865)	16.86	17.00	
		820 (26750)	16.93	17.06	
25RB-Low (0)		844 (26990)	16.99	16.86	
		831.5 (26865)	16.98	17.12	

15MHz	50RB (0)	820 (26750)	17.16	16.89
		844 (26990)	16.64	16.87
		831.5 (26865)	16.93	16.95
		820 (26750)	16.93	17.03
	1RB-High (74)	841.5 (26965)	16.63	16.90
		831.5 (26865)	16.74	16.96
		822.5 (26775)	16.81	17.14
	1RB-Middle (37)	841.5 (26965)	16.83	17.05
		831.5 (26865)	16.92	17.19
		822.5 (26775)	17.05	17.28
	1RB-Low (0)	841.5 (26965)	16.82	17.12
		831.5 (26865)	16.93	17.23
		822.5 (26775)	17.06	17.25
	36RB-High (38)	841.5 (26965)	16.73	16.72
		831.5 (26865)	16.89	16.86
		822.5 (26775)	17.02	16.98
	36RB-Middle (19)	841.5 (26965)	16.85	16.83
		831.5 (26865)	16.97	16.93
		822.5 (26775)	17.08	17.07
	36RB-Low (0)	841.5 (26965)	16.87	16.88
		831.5 (26865)	17.01	16.97
		822.5 (26775)	17.13	17.09
	75RB (0)	841.5 (26965)	16.80	16.80
		831.5 (26865)	16.94	16.91
		822.5 (26775)	17.08	17.04

**LTE B30 – DSI0**

LTE B30				
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
5MHz	1RB-High (24)	2312.5 (27735)	22.37	21.57
		2310 (27710)	22.41	21.61
		2307.5 (27685)	22.46	21.64
	1RB-Middle (12)	2312.5 (27735)	22.73	21.92
		2310 (27710)	22.75	21.85
		2307.5 (27685)	22.72	22.06
	1RB-Low (0)	2312.5 (27735)	22.47	21.76
		2310 (27710)	22.47	21.69
		2307.5 (27685)	22.49	21.79
	12RB-High (13)	2312.5 (27735)	21.50	20.48
		2310 (27710)	21.56	20.54
		2307.5 (27685)	21.58	20.52

	12RB-Middle (6)	2312.5 (27735)	21.61	20.56
		2310 (27710)	21.65	20.63
		2307.5 (27685)	21.65	20.62
	12RB-Low (0)	2312.5 (27735)	21.56	20.56
		2310 (27710)	21.60	20.63
		2307.5 (27685)	21.60	20.58
	25RB (0)	2312.5 (27735)	21.56	20.58
		2310 (27710)	21.58	20.60
		2307.5 (27685)	21.60	20.59
10MHz	1RB-High (49)	2310 (27710)	22.44	21.83
	1RB-Middle (24)	2310 (27710)	22.62	21.94
	1RB-Low (0)	2310 (27710)	22.62	21.85
	25RB-High (25)	2310 (27710)	21.58	20.54
	25RB-Middle (12)	2310 (27710)	21.62	20.59
	25RB-Low (0)	2310 (27710)	21.66	20.67
	50RB (0)	2310 (27710)	21.61	20.61

**LTE B30 – DS1**

LTE B30				
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
5MHz	1RB-High (24)	2312.5 (27735)	13.14	13.33
		2310 (27710)	13.18	13.55
		2307.5 (27685)	13.17	13.16
	1RB-Middle (12)	2312.5 (27735)	13.35	13.28
		2310 (27710)	13.50	13.38
		2307.5 (27685)	13.45	13.50
	1RB-Low (0)	2312.5 (27735)	13.19	13.30
		2310 (27710)	13.25	13.14
		2307.5 (27685)	13.24	13.14
	12RB-High (13)	2312.5 (27735)	13.29	13.38
		2310 (27710)	13.30	13.41
		2307.5 (27685)	13.33	13.24
	12RB-Middle (6)	2312.5 (27735)	13.37	13.27
		2310 (27710)	13.39	13.43
		2307.5 (27685)	13.39	13.50
	12RB-Low (0)	2312.5 (27735)	13.34	13.43
		2310 (27710)	13.36	13.27
		2307.5 (27685)	13.36	13.37
	25RB (0)	2312.5 (27735)	13.34	13.47
		2310 (27710)	13.34	13.24
		2307.5 (27685)	13.35	13.26

10MHz	1RB-High (49)	2310 (27710)	13.23	13.42
	1RB-Middle (24)	2310 (27710)	13.41	13.76
	1RB-Low (0)	2310 (27710)	13.40	13.65
	25RB-High (25)	2310 (27710)	13.35	13.35
	25RB-Middle (12)	2310 (27710)	13.40	13.39
	25RB-Low (0)	2310 (27710)	13.45	13.44
	50RB (0)	2310 (27710)	13.40	13.40

**LTE B41 PC3 – DS10**

LTE B41 PC3				
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
5MHz	1RB-High (24)	2687.5 (41565)	22.06	21.19
		2640.3(41093)	22.20	21.31
		2593 (40620)	22.42	21.50
		2545.8(40148)	22.64	21.73
		2498.5 (39675)	22.80	21.95
	1RB-Middle (12)	2687.5 (41565)	22.44	21.47
		2640.3(41093)	22.47	21.59
		2593 (40620)	22.80	21.93
		2545.8(40148)	22.93	22.03
		2498.5 (39675)	23.16	22.31
	1RB-Low (0)	2687.5 (41565)	22.08	21.25
		2640.3(41093)	22.25	21.35
		2593 (40620)	22.52	21.61
		2545.8(40148)	22.69	21.75
		2498.5 (39675)	22.89	21.97
	12RB-High (13)	2687.5 (41565)	21.18	20.15
		2640.3(41093)	21.30	20.31
		2593 (40620)	21.57	20.48
		2545.8(40148)	21.72	20.66
		2498.5 (39675)	21.96	20.88
	12RB-Middle (6)	2687.5 (41565)	21.26	20.19
		2640.3(41093)	21.39	20.28
		2593 (40620)	21.63	20.56
		2545.8(40148)	21.80	20.73
		2498.5 (39675)	22.02	20.95
	12RB-Low (0)	2687.5 (41565)	21.19	20.15
		2640.3(41093)	21.35	20.27
		2593 (40620)	21.57	20.51
		2545.8(40148)	21.74	20.68
		2498.5 (39675)	21.95	20.89

		2687.5 (41565)	21.18	20.22
		2640.3(41093)	21.34	20.38
	25RB (0)	2593 (40620)	21.58	20.57
		2545.8(40148)	21.78	20.76
		2498.5 (39675)	22.01	20.97
10MHz	1RB-High (49)	2685 (41540)	22.17	21.28
		2639(41080)	22.28	21.36
		2593 (40620)	22.52	21.61
		2547(40160)	22.69	21.79
		2501 (39700)	22.93	22.03
	1RB-Middle (24)	2685 (41540)	22.30	21.39
		2639(41080)	22.30	21.39
		2593 (40620)	22.58	21.74
		2547(40160)	22.74	21.88
		2501 (39700)	23.05	22.14
	1RB-Low (0)	2685 (41540)	22.20	21.38
		2639(41080)	22.37	21.49
		2593 (40620)	22.62	21.72
		2547(40160)	22.81	21.88
		2501 (39700)	22.93	22.05
	25RB-High (25)	2685 (41540)	21.14	20.21
		2639(41080)	21.32	20.29
		2593 (40620)	21.58	20.60
		2547(40160)	21.72	20.74
		2501 (39700)	22.07	20.99
	25RB-Middle (12)	2685 (41540)	21.22	20.25
		2639(41080)	21.38	20.32
		2593 (40620)	21.66	20.59
		2547(40160)	21.84	20.75
		2501 (39700)	22.02	20.96
	25RB-Low (0)	2685 (41540)	21.33	20.36
		2639(41080)	21.41	20.38
		2593 (40620)	21.65	20.63
		2547(40160)	21.86	20.84
		2501 (39700)	22.01	20.97
50RB (0)	2685 (41540)	21.24	20.32	
	2639(41080)	21.38	20.42	
	2593 (40620)	21.60	20.66	
	2547(40160)	21.76	20.81	
	2501 (39700)	21.96	21.01	
15MHz	1RB-High (74)	2682.5 (41515)	22.03	21.18
		2637.8(41068)	22.20	21.33

		2593 (40620)	22.41	21.52
		2548.3(40173)	22.63	21.74
		2503.5 (39725)	22.82	21.91
	1RB-Middle (37)	2682.5 (41515)	22.33	21.39
		2637.8(41068)	22.37	21.45
		2593 (40620)	22.64	21.71
		2548.3(40173)	22.79	21.89
		2503.5 (39725)	23.01	22.05
	1RB-Low (0)	2682.5 (41515)	22.26	21.39
		2637.8(41068)	22.36	21.47
		2593 (40620)	22.60	21.69
		2548.3(40173)	22.74	21.80
		2503.5 (39725)	22.93	22.01
	36RB-High (38)	2682.5 (41515)	21.26	20.17
		2637.8(41068)	21.40	20.29
		2593 (40620)	21.64	20.55
		2548.3(40173)	21.82	20.66
		2503.5 (39725)	22.00	20.88
	36RB-Middle (19)	2682.5 (41515)	21.32	20.27
		2637.8(41068)	21.39	20.33
		2593 (40620)	21.66	20.61
		2548.3(40173)	21.86	20.72
		2503.5 (39725)	22.03	20.94
	36RB-Low (0)	2682.5 (41515)	21.37	20.25
		2637.8(41068)	21.43	20.36
		2593 (40620)	21.66	20.59
		2548.3(40173)	21.84	20.76
		2503.5 (39725)	21.95	20.86
75RB (0)	2682.5 (41515)	21.34	20.35	
	2637.8(41068)	21.46	20.40	
	2593 (40620)	21.69	20.66	
	2548.3(40173)	21.76	20.82	
	2503.5 (39725)	21.93	21.00	
20MHz	1RB-High (99)	2680 (41490)	22.34	21.24
		2636.5(41055)	22.26	21.33
		2593 (40620)	22.48	21.48
		2549.5(40185)	22.67	21.72
		2506 (39750)	22.81	21.93
	1RB-Middle (50)	2680 (41490)	22.50	21.61
		2636.5(41055)	22.60	21.71
		2593 (40620)	22.84	21.89
		2549.5(40185)	23.06	22.07

	1RB-Low (0)	2506 (39750)	23.17	22.23
		2680 (41490)	22.34	21.41
		2636.5(41055)	22.47	21.50
		2593 (40620)	22.69	21.74
		2549.5(40185)	22.83	21.86
	50RB-High (50)	2506 (39750)	22.88	21.99
		2680 (41490)	21.33	20.30
		2636.5(41055)	21.47	20.46
		2593 (40620)	21.71	20.70
		2549.5(40185)	21.79	20.81
	50RB-Middle (25)	2506 (39750)	22.01	21.08
		2680 (41490)	21.47	20.45
		2636.5(41055)	21.55	20.55
		2593 (40620)	21.75	20.73
		2549.5(40185)	21.89	20.83
	50RB-Low (0)	2506 (39750)	22.03	21.05
		2680 (41490)	21.50	20.49
		2636.5(41055)	21.56	20.56
		2593 (40620)	21.77	20.76
		2549.5(40185)	21.90	20.92
100RB (0)	2506 (39750)	21.93	20.95	
	2680 (41490)	21.44	20.41	
	2636.5(41055)	21.54	20.50	
	2593 (40620)	21.77	20.72	
	2549.5(40185)	21.90	20.90	
		2506 (39750)	22.02	21.05

**LTE B41 PC3 – DS11**

LTE B41 PC3				
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
5MHz	1RB-High (24)	2687.5 (41565)	14.23	14.52
		2640.3(41093)	14.42	14.58
		2593 (40620)	14.70	14.62
		2545.8(40148)	14.85	14.97
		2498.5 (39675)	14.92	15.23
	1RB-Middle (12)	2687.5 (41565)	14.59	14.86
		2640.3(41093)	14.89	14.89
		2593 (40620)	15.06	15.08
		2545.8(40148)	15.17	15.31
		2498.5 (39675)	15.46	15.43
	1RB-Low (0)	2687.5 (41565)	14.60	14.58



		2640.3(41093)	14.75	14.89
		2593 (40620)	14.90	14.92
		2545.8(40148)	15.06	15.05
		2498.5 (39675)	15.31	15.30
	12RB-High (13)	2687.5 (41565)	14.28	14.58
		2640.3(41093)	14.64	14.42
		2593 (40620)	14.70	14.76
		2545.8(40148)	14.99	14.97
		2498.5 (39675)	15.13	14.99
	12RB-Middle (6)	2687.5 (41565)	14.54	14.66
		2640.3(41093)	14.48	14.87
		2593 (40620)	14.86	14.96
		2545.8(40148)	15.04	14.93
		2498.5 (39675)	15.30	15.24
	12RB-Low (0)	2687.5 (41565)	14.62	14.53
		2640.3(41093)	14.73	14.57
		2593 (40620)	14.75	14.87
		2545.8(40148)	15.07	14.87
		2498.5 (39675)	15.26	15.35
	25RB (0)	2687.5 (41565)	14.65	14.45
2640.3(41093)		14.70	14.85	
2593 (40620)		14.93	15.06	
2545.8(40148)		15.09	14.86	
2498.5 (39675)		15.34	15.20	
10MHz	1RB-High (49)	2685 (41540)	14.23	14.39
		2639(41080)	14.38	14.46
		2593 (40620)	14.70	14.87
		2547(40160)	14.69	14.99
		2501 (39700)	14.84	15.10
	1RB-Middle (24)	2685 (41540)	14.71	14.68
		2639(41080)	14.59	14.65
		2593 (40620)	14.94	14.93
		2547(40160)	14.96	15.20
		2501 (39700)	15.19	15.52
	1RB-Low (0)	2685 (41540)	14.68	14.51
		2639(41080)	14.70	14.83
		2593 (40620)	14.96	14.89
		2547(40160)	15.02	15.01
		2501 (39700)	15.24	15.18
	25RB-High (25)	2685 (41540)	14.33	14.51
		2639(41080)	14.51	14.66
		2593 (40620)	14.76	14.91

		2547(40160)	14.77	14.86	
		2501 (39700)	15.07	15.31	
	25RB-Middle (12)	2685 (41540)	14.58	14.70	
		2639(41080)	14.68	14.80	
		2593 (40620)	14.94	14.86	
		2547(40160)	14.84	15.10	
		2501 (39700)	15.22	15.25	
	25RB-Low (0)	2685 (41540)	14.49	14.73	
		2639(41080)	14.53	14.73	
		2593 (40620)	14.73	14.87	
		2547(40160)	14.77	15.12	
		2501 (39700)	15.15	15.09	
	50RB (0)	2685 (41540)	14.44	14.58	
		2639(41080)	14.59	14.83	
		2593 (40620)	14.80	15.04	
		2547(40160)	14.87	15.17	
		2501 (39700)	15.25	15.28	
	15MHz	1RB-High (74)	2682.5 (41515)	14.28	14.25
			2637.8(41068)	14.34	14.65
			2593 (40620)	14.58	14.63
2548.3(40173)			14.91	15.02	
2503.5 (39725)			15.11	15.01	
1RB-Middle (37)		2682.5 (41515)	14.67	14.83	
		2637.8(41068)	14.89	14.94	
		2593 (40620)	15.02	15.03	
		2548.3(40173)	15.02	15.18	
		2503.5 (39725)	15.25	15.30	
1RB-Low (0)		2682.5 (41515)	14.63	14.59	
		2637.8(41068)	14.56	14.57	
		2593 (40620)	14.84	15.14	
		2548.3(40173)	14.97	14.91	
		2503.5 (39725)	15.22	15.31	
36RB-High (38)		2682.5 (41515)	14.34	14.49	
		2637.8(41068)	14.44	14.62	
		2593 (40620)	14.77	14.76	
		2548.3(40173)	14.99	14.95	
		2503.5 (39725)	15.05	15.05	
36RB-Middle (19)	2682.5 (41515)	14.58	14.46		
	2637.8(41068)	14.72	14.81		
	2593 (40620)	14.70	14.76		
	2548.3(40173)	15.03	14.86		
	2503.5 (39725)	15.03	15.13		

	36RB-Low (0)	2682.5 (41515)	14.77	14.78
		2637.8(41068)	14.48	14.70
		2593 (40620)	15.02	15.07
		2548.3(40173)	15.01	14.88
		2503.5 (39725)	15.10	15.07
	75RB (0)	2682.5 (41515)	14.67	14.43
		2637.8(41068)	14.76	14.79
		2593 (40620)	14.79	14.98
		2548.3(40173)	14.99	14.92
		2503.5 (39725)	15.17	15.24
20MHz	1RB-High (99)	2680 (41490)	14.36	14.44
		2636.5(41055)	14.49	14.54
		2593 (40620)	14.71	14.79
		2549.5(40185)	14.79	14.89
		2506 (39750)	15.02	15.10
	1RB-Middle (50)	2680 (41490)	14.69	14.74
		2636.5(41055)	14.79	14.85
		2593 (40620)	15.05	15.13
		2549.5(40185)	15.08	15.18
		2506 (39750)	15.33	15.42
	1RB-Low (0)	2680 (41490)	14.57	14.63
		2636.5(41055)	14.70	14.74
		2593 (40620)	14.87	15.01
		2549.5(40185)	14.94	15.01
		2506 (39750)	15.18	15.29
	50RB-High (50)	2680 (41490)	14.41	14.44
		2636.5(41055)	14.58	14.59
		2593 (40620)	14.80	14.90
		2549.5(40185)	14.87	14.91
		2506 (39750)	15.09	15.19
	50RB-Middle (25)	2680 (41490)	14.57	14.61
		2636.5(41055)	14.60	14.72
		2593 (40620)	14.84	14.88
		2549.5(40185)	14.89	14.98
		2506 (39750)	15.21	15.23
	50RB-Low (0)	2680 (41490)	14.65	14.65
		2636.5(41055)	14.64	14.68
		2593 (40620)	14.89	14.94
2549.5(40185)		14.96	15.03	
2506 (39750)		15.14	15.21	
100RB (0)	2680 (41490)	14.62	14.57	
	2636.5(41055)	14.69	14.73	

		2593 (40620)	14.94	14.97
		2549.5(40185)	15.02	15.06
		2506 (39750)	15.20	15.24

**LTE B41 PC2 – DS10**

LTE B41 PC2				
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
5MHz	1RB-High (24)	2687.5 (41565)	25.38	24.54
		2640.3(41093)	25.52	24.68
		2593 (40620)	25.78	24.95
		2545.8(40148)	25.93	25.06
		2498.5 (39675)	26.17	25.28
	1RB-Middle (12)	2687.5 (41565)	25.59	24.71
		2640.3(41093)	25.73	24.85
		2593 (40620)	25.98	25.10
		2545.8(40148)	26.13	25.24
		2498.5 (39675)	26.38	25.44
	1RB-Low (0)	2687.5 (41565)	25.44	24.58
		2640.3(41093)	25.58	24.72
		2593 (40620)	25.84	24.98
		2545.8(40148)	25.98	25.09
		2498.5 (39675)	26.19	25.27
	12RB-High (13)	2687.5 (41565)	24.57	23.57
		2640.3(41093)	24.68	23.64
		2593 (40620)	24.95	23.96
		2545.8(40148)	25.06	24.06
		2498.5 (39675)	25.37	24.33
	12RB-Middle (6)	2687.5 (41565)	24.65	23.64
		2640.3(41093)	24.81	23.69
		2593 (40620)	25.03	24.00
		2545.8(40148)	25.18	24.12
		2498.5 (39675)	25.38	24.36
	12RB-Low (0)	2687.5 (41565)	24.60	23.59
		2640.3(41093)	24.73	23.75
		2593 (40620)	24.98	23.94
		2545.8(40148)	25.06	24.07
		2498.5 (39675)	25.39	24.31
	25RB (0)	2687.5 (41565)	24.59	23.60
		2640.3(41093)	24.68	23.77
		2593 (40620)	24.96	23.98
		2545.8(40148)	25.09	24.10

		2498.5 (39675)	25.33	24.35
10MHz	1RB-High (49)	2685 (41540)	25.46	24.62
		2639(41080)	25.60	24.77
		2593 (40620)	25.85	24.99
		2547(40160)	26.00	25.14
		2501 (39700)	26.18	25.34
	1RB-Middle (24)	2685 (41540)	25.60	24.76
		2639(41080)	25.73	24.91
		2593 (40620)	25.99	25.13
		2547(40160)	26.11	25.26
		2501 (39700)	26.31	25.44
	1RB-Low (0)	2685 (41540)	25.57	24.73
		2639(41080)	25.68	24.87
		2593 (40620)	25.95	25.11
		2547(40160)	26.07	25.22
		2501 (39700)	26.27	25.36
	25RB-High (25)	2685 (41540)	24.56	23.61
		2639(41080)	24.72	23.76
		2593 (40620)	24.98	24.00
		2547(40160)	25.10	24.12
		2501 (39700)	25.37	24.33
	25RB-Middle (12)	2685 (41540)	24.65	23.66
		2639(41080)	24.75	23.75
		2593 (40620)	25.01	24.01
		2547(40160)	25.13	24.15
		2501 (39700)	25.34	24.34
25RB-Low (0)	2685 (41540)	24.68	23.72	
	2639(41080)	24.80	23.75	
	2593 (40620)	25.02	24.03	
	2547(40160)	25.19	24.17	
	2501 (39700)	25.30	24.31	
50RB (0)	2685 (41540)	24.63	23.68	
	2639(41080)	24.74	23.77	
	2593 (40620)	25.01	24.05	
	2547(40160)	25.15	24.17	
	2501 (39700)	25.37	24.38	
15MHz	1RB-High (74)	2682.5 (41515)	25.36	24.53
		2637.8(41068)	25.48	24.66
		2593 (40620)	25.73	24.90
		2548.3(40173)	25.90	25.05
		2503.5 (39725)	26.08	25.23
	1RB-Middle (37)	2682.5 (41515)	25.55	24.73

		2637.8(41068)	25.69	24.85
		2593 (40620)	25.92	25.09
		2548.3(40173)	26.07	25.21
		2503.5 (39725)	26.24	25.37
	1RB-Low (0)	2682.5 (41515)	25.53	24.69
		2637.8(41068)	25.66	24.82
		2593 (40620)	25.89	25.07
		2548.3(40173)	26.01	25.15
		2503.5 (39725)	26.18	25.29
	36RB-High (38)	2682.5 (41515)	24.56	23.54
		2637.8(41068)	24.69	23.65
		2593 (40620)	24.96	23.90
		2548.3(40173)	25.06	24.01
		2503.5 (39725)	25.33	24.28
	36RB-Middle (19)	2682.5 (41515)	24.64	23.61
		2637.8(41068)	24.76	23.71
		2593 (40620)	25.01	23.94
		2548.3(40173)	25.14	24.08
		2503.5 (39725)	25.35	24.29
	36RB-Low (0)	2682.5 (41515)	24.67	23.67
2637.8(41068)		24.77	23.73	
2593 (40620)		25.00	23.96	
2548.3(40173)		25.16	24.09	
2503.5 (39725)		25.29	24.23	
75RB (0)	2682.5 (41515)	24.64	23.65	
	2637.8(41068)	24.72	23.74	
	2593 (40620)	24.98	24.00	
	2548.3(40173)	25.09	24.12	
	2503.5 (39725)	25.31	24.29	
20MHz	1RB-High (99)	2680 (41490)	25.27	24.46
		2636.5(41055)	25.42	24.59
		2593 (40620)	25.63	24.82
		2549.5(40185)	25.81	24.98
		2506 (39750)	25.99	25.15
	1RB-Middle (50)	2680 (41490)	25.64	24.80
		2636.5(41055)	25.76	24.92
		2593 (40620)	26.00	25.15
		2549.5(40185)	26.13	25.27
		2506 (39750)	26.30	25.43
	1RB-Low (0)	2680 (41490)	25.49	24.68
		2636.5(41055)	25.64	24.82
		2593 (40620)	25.85	25.02

		2549.5(40185)	25.95	25.10
		2506 (39750)	26.12	25.23
	50RB-High (50)	2680 (41490)	24.49	23.54
		2636.5(41055)	24.66	23.71
		2593 (40620)	24.92	23.96
		2549.5(40185)	25.03	24.05
		2506 (39750)	25.29	24.31
	50RB-Middle (25)	2680 (41490)	24.64	23.69
		2636.5(41055)	24.74	23.80
		2593 (40620)	24.99	24.03
		2549.5(40185)	25.11	24.14
		2506 (39750)	25.32	24.32
	50RB-Low (0)	2680 (41490)	24.68	23.75
		2636.5(41055)	24.78	23.82
		2593 (40620)	25.00	24.02
		2549.5(40185)	25.14	24.16
		2506 (39750)	25.23	24.24
	100RB (0)	2680 (41490)	24.63	23.65
		2636.5(41055)	24.75	23.78
		2593 (40620)	24.97	23.99
2549.5(40185)		25.10	24.10	
2506 (39750)		25.29	24.29	

**LTE B41 PC2 – DSI1**

LTE B41 PC2				
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
5MHz	1RB-High (24)	2687.5 (41565)	17.33	17.58
		2640.3(41093)	17.54	17.82
		2593 (40620)	17.58	17.81
		2545.8(40148)	18.04	18.22
		2498.5 (39675)	17.93	18.22
	1RB-Middle (12)	2687.5 (41565)	17.81	18.07
		2640.3(41093)	17.70	18.07
		2593 (40620)	18.16	18.34
		2545.8(40148)	18.24	18.51
		2498.5 (39675)	18.19	18.67
	1RB-Low (0)	2687.5 (41565)	17.50	17.80
		2640.3(41093)	17.77	17.81
		2593 (40620)	17.93	18.03
		2545.8(40148)	17.86	18.21
		2498.5 (39675)	18.13	18.37

	12RB-High (13)	2687.5 (41565)	17.55	17.59
		2640.3(41093)	17.51	17.54
		2593 (40620)	18.00	17.76
		2545.8(40148)	17.89	18.12
		2498.5 (39675)	18.39	18.17
	12RB-Middle (6)	2687.5 (41565)	17.76	17.61
		2640.3(41093)	17.58	17.62
		2593 (40620)	17.99	17.88
		2545.8(40148)	17.95	18.25
		2498.5 (39675)	18.16	18.23
	12RB-Low (0)	2687.5 (41565)	17.47	17.78
		2640.3(41093)	17.80	17.93
		2593 (40620)	17.77	18.07
		2545.8(40148)	18.11	18.02
		2498.5 (39675)	18.05	18.31
	25RB (0)	2687.5 (41565)	17.63	17.49
		2640.3(41093)	17.72	17.79
		2593 (40620)	18.07	17.95
		2545.8(40148)	18.05	17.97
		2498.5 (39675)	18.08	18.42
10MHz	1RB-High (49)	2685 (41540)	17.23	17.58
		2639(41080)	17.46	17.53
		2593 (40620)	17.68	17.93
		2547(40160)	18.02	17.89
		2501 (39700)	17.94	18.13
	1RB-Middle (24)	2685 (41540)	17.85	17.77
		2639(41080)	17.92	17.87
		2593 (40620)	18.15	18.28
		2547(40160)	18.18	18.23
		2501 (39700)	18.53	18.53
	1RB-Low (0)	2685 (41540)	17.42	17.88
		2639(41080)	17.50	17.75
		2593 (40620)	17.82	18.18
		2547(40160)	18.05	18.24
		2501 (39700)	18.16	18.25
	25RB-High (25)	2685 (41540)	17.45	17.52
		2639(41080)	17.76	17.49
		2593 (40620)	17.82	17.73
		2547(40160)	17.81	18.11
		2501 (39700)	18.08	18.46
25RB-Middle (12)	2685 (41540)	17.58	17.78	
	2639(41080)	17.63	17.69	



		2593 (40620)	17.79	17.97	
		2547(40160)	18.15	18.25	
		2501 (39700)	18.24	18.42	
	25RB-Low (0)	2685 (41540)	17.51	17.83	
		2639(41080)	17.69	17.66	
		2593 (40620)	17.85	18.07	
		2547(40160)	18.05	18.10	
		2501 (39700)	18.11	18.19	
	50RB (0)	2685 (41540)	17.57	17.61	
		2639(41080)	17.71	17.74	
		2593 (40620)	18.00	18.05	
		2547(40160)	18.00	17.91	
		2501 (39700)	18.16	18.40	
	15MHz	1RB-High (74)	2682.5 (41515)	17.26	17.44
			2637.8(41068)	17.31	17.59
2593 (40620)			17.75	17.81	
2548.3(40173)			17.89	18.15	
2503.5 (39725)			18.07	18.28	
1RB-Middle (37)		2682.5 (41515)	17.80	18.02	
		2637.8(41068)	17.94	17.79	
		2593 (40620)	17.97	18.29	
		2548.3(40173)	18.06	18.42	
		2503.5 (39725)	18.54	18.53	
1RB-Low (0)		2682.5 (41515)	17.53	17.81	
		2637.8(41068)	17.53	17.72	
		2593 (40620)	17.77	17.98	
		2548.3(40173)	17.85	18.38	
		2503.5 (39725)	18.26	18.51	
36RB-High (38)		2682.5 (41515)	17.42	17.54	
		2637.8(41068)	17.57	17.62	
		2593 (40620)	17.74	18.04	
		2548.3(40173)	18.00	17.94	
		2503.5 (39725)	18.34	18.44	
36RB-Middle (19)		2682.5 (41515)	17.53	17.83	
		2637.8(41068)	17.85	17.68	
		2593 (40620)	17.80	17.97	
		2548.3(40173)	17.97	18.28	
		2503.5 (39725)	18.43	18.31	
36RB-Low (0)		2682.5 (41515)	17.69	17.52	
		2637.8(41068)	17.89	17.85	
		2593 (40620)	18.06	18.00	
	2548.3(40173)	17.97	18.09		

		2503.5 (39725)	18.06	18.05
	75RB (0)	2682.5 (41515)	17.71	17.55
		2637.8(41068)	17.61	17.69
		2593 (40620)	17.73	18.08
		2548.3(40173)	18.03	17.90
		2503.5 (39725)	18.13	18.43
20MHz		1RB-High (99)	2680 (41490)	17.38
	2636.5(41055)		17.48	17.68
	2593 (40620)		17.70	17.93
	2549.5(40185)		17.91	18.09
	2506 (39750)		18.10	18.33
	2680 (41490)		17.71	17.93
	1RB-Middle (50)	2636.5(41055)	17.82	17.99
		2593 (40620)	18.07	18.28
		2549.5(40185)	18.18	18.41
		2506 (39750)	18.39	18.63
		2680 (41490)	17.58	17.78
	1RB-Low (0)	2636.5(41055)	17.70	17.91
		2593 (40620)	17.94	18.14
		2549.5(40185)	18.04	18.27
		2506 (39750)	18.21	18.45
		2680 (41490)	17.47	17.53
	50RB-High (50)	2636.5(41055)	17.64	17.69
		2593 (40620)	17.91	17.91
		2549.5(40185)	18.00	18.02
		2506 (39750)	18.27	18.32
		2680 (41490)	17.64	17.68
	50RB-Middle (25)	2636.5(41055)	17.71	17.75
		2593 (40620)	17.95	18.01
		2549.5(40185)	18.07	18.14
		2506 (39750)	18.28	18.34
		2680 (41490)	17.67	17.71
	50RB-Low (0)	2636.5(41055)	17.75	17.78
		2593 (40620)	17.97	18.02
		2549.5(40185)	18.11	18.17
		2506 (39750)	18.21	18.25
		2680 (41490)	17.56	17.58
	100RB (0)	2636.5(41055)	17.66	17.70
		2593 (40620)	17.92	17.95
		2549.5(40185)	18.04	18.10
		2506 (39750)	18.22	18.28

## LTE B66 – DSI0

LTE B66					
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	
1.4MHz	1RB-High (5)	1779.3 (132665)	23.02	22.31	
		1745 (132322)	23.02	22.28	
		1710.7 (131979)	23.23	22.52	
	1RB-Middle (3)	1779.3 (132665)	23.19	22.41	
		1745 (132322)	23.14	22.39	
		1710.7 (131979)	23.35	22.52	
	1RB-Low (0)	1779.3 (132665)	23.01	22.29	
		1745 (132322)	23.01	22.23	
		1710.7 (131979)	23.21	22.46	
	3RB-High (3)	1779.3 (132665)	23.11	22.05	
		1745 (132322)	23.13	22.08	
		1710.7 (131979)	23.34	22.30	
	3RB-Middle (1)	1779.3 (132665)	23.18	22.10	
		1745 (132322)	23.16	22.14	
		1710.7 (131979)	23.40	22.30	
	3RB-Low (0)	1779.3 (132665)	23.12	22.07	
		1745 (132322)	23.13	22.07	
		1710.7 (131979)	23.34	22.27	
	6RB (0)	1779.3 (132665)	22.12	21.21	
		1745 (132322)	22.08	21.18	
		1710.7 (131979)	22.32	21.37	
	3MHz	1RB-High (14)	1778.5 (132657)	23.08	22.30
			1745 (132322)	23.09	22.26
			1711.5 (131987)	23.27	22.47
1RB-Middle (7)		1778.5 (132657)	23.23	22.52	
		1745 (132322)	23.25	22.52	
		1711.5 (131987)	23.44	22.72	
1RB-Low (0)		1778.5 (132657)	23.08	22.38	
		1745 (132322)	23.08	22.40	
		1711.5 (131987)	23.29	22.57	
8RB-High (7)		1778.5 (132657)	22.11	21.17	
		1745 (132322)	22.11	21.12	
		1711.5 (131987)	22.29	21.32	
8RB-Middle (4)		1778.5 (132657)	22.15	21.17	
		1745 (132322)	22.13	21.17	
		1711.5 (131987)	22.31	21.34	
8RB-Low (0)		1778.5 (132657)	22.13	21.18	
		1745 (132322)	22.10	21.17	

		1711.5 (131987)	22.29	21.33
	15RB (0)	1778.5 (132657)	22.13	21.13
		1745 (132322)	22.09	21.08
		1711.5 (131987)	22.28	21.27
5MHz	1RB-High (24)	1777.5 (132647)	22.97	22.16
		1745 (132322)	22.99	22.18
		1712.5 (131997)	23.15	22.37
	1RB-Middle (12)	1777.5 (132647)	23.25	22.58
		1745 (132322)	23.24	22.49
		1712.5 (131997)	23.49	22.72
	1RB-Low (0)	1777.5 (132647)	22.99	22.26
		1745 (132322)	22.98	22.21
		1712.5 (131997)	23.21	22.39
	12RB-High (13)	1777.5 (132647)	22.13	21.10
		1745 (132322)	22.10	21.05
		1712.5 (131997)	22.29	21.28
	12RB-Middle (6)	1777.5 (132647)	22.18	21.17
		1745 (132322)	22.16	21.14
		1712.5 (131997)	22.35	21.34
	12RB-Low (0)	1777.5 (132647)	22.12	21.08
		1745 (132322)	22.10	21.07
		1712.5 (131997)	22.27	21.24
	25RB (0)	1777.5 (132647)	22.11	21.14
		1745 (132322)	22.11	21.10
		1712.5 (131997)	22.31	21.28
10MHz	1RB-High (49)	1775 (132622)	23.03	22.27
		1745 (132322)	23.06	22.29
		1715 (132022)	23.18	22.33
	1RB-Middle (24)	1775 (132622)	23.15	22.47
		1745 (132322)	23.21	22.46
		1715 (132022)	23.34	22.60
	1RB-Low (0)	1775 (132622)	23.07	22.23
		1745 (132322)	23.11	22.28
		1715 (132022)	23.27	22.59
	25RB-High (25)	1775 (132622)	22.14	21.14
		1745 (132322)	22.15	21.15
		1715 (132022)	22.31	21.31
	25RB-Middle (12)	1775 (132622)	22.16	21.16
		1745 (132322)	22.15	21.17
		1715 (132022)	22.35	21.32
25RB-Low (0)	1775 (132622)	22.19	21.17	
	1745 (132322)	22.18	21.18	

	50RB (0)	1715 (132022)	22.31	21.32
		1775 (132622)	22.16	21.15
		1745 (132322)	22.16	21.17
		1715 (132022)	22.33	21.32
15MHz	1RB-High (74)	1772.5 (132597)	23.00	22.24
		1745 (132322)	22.99	22.19
		1717.5 (132047)	23.12	22.25
	1RB-Middle (37)	1772.5 (132597)	23.09	22.38
		1745 (132322)	23.10	22.44
		1717.5 (132047)	23.25	22.52
	1RB-Low (0)	1772.5 (132597)	23.00	22.29
		1745 (132322)	23.07	22.27
		1717.5 (132047)	23.26	22.52
	36RB-High (38)	1772.5 (132597)	22.15	21.10
		1745 (132322)	22.15	21.10
		1717.5 (132047)	22.29	21.21
	36RB-Middle (19)	1772.5 (132597)	22.16	21.13
		1745 (132322)	22.17	21.10
		1717.5 (132047)	22.32	21.25
	36RB-Low (0)	1772.5 (132597)	22.20	21.14
		1745 (132322)	22.18	21.13
		1717.5 (132047)	22.33	21.25
	75RB (0)	1772.5 (132597)	22.16	21.15
		1745 (132322)	22.17	21.13
		1717.5 (132047)	22.30	21.24

**LTE B66 – DSI1**

LTE B66				
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	1779.3 (132665)	12.04	12.28
		1745 (132322)	11.96	12.24
		1710.7 (131979)	12.19	12.45
	1RB-Middle (3)	1779.3 (132665)	12.14	12.45
		1745 (132322)	12.09	12.47
		1710.7 (131979)	12.34	12.65
	1RB-Low (0)	1779.3 (132665)	12.00	12.35
		1745 (132322)	11.97	12.30
		1710.7 (131979)	12.21	12.49
	3RB-High (3)	1779.3 (132665)	12.14	12.09
		1745 (132322)	12.10	12.12
		1710.7 (131979)	12.34	12.25

	3RB-Middle (1)	1779.3 (132665)	12.15	12.16
		1745 (132322)	12.13	12.16
		1710.7 (131979)	12.34	12.41
	3RB-Low (0)	1779.3 (132665)	12.10	12.07
		1745 (132322)	12.07	12.02
		1710.7 (131979)	12.34	12.30
	6RB (0)	1779.3 (132665)	12.10	12.19
		1745 (132322)	12.08	12.18
		1710.7 (131979)	12.28	12.42
3MHz	1RB-High (14)	1778.5 (132657)	12.07	12.31
		1745 (132322)	12.03	12.40
		1711.5 (131987)	12.25	12.48
	1RB-Middle (7)	1778.5 (132657)	12.26	12.52
		1745 (132322)	12.17	12.40
		1711.5 (131987)	12.43	12.74
	1RB-Low (0)	1778.5 (132657)	12.05	12.38
		1745 (132322)	12.04	12.33
		1711.5 (131987)	12.28	12.53
	8RB-High (7)	1778.5 (132657)	12.06	12.13
		1745 (132322)	12.07	12.11
		1711.5 (131987)	12.26	12.34
	8RB-Middle (4)	1778.5 (132657)	12.14	12.18
		1745 (132322)	12.10	12.18
		1711.5 (131987)	12.32	12.39
	8RB-Low (0)	1778.5 (132657)	12.09	12.14
		1745 (132322)	12.07	12.14
		1711.5 (131987)	12.30	12.37
	15RB (0)	1778.5 (132657)	12.07	12.09
		1745 (132322)	12.05	12.07
		1711.5 (131987)	12.27	12.29
5MHz	1RB-High (24)	1777.5 (132647)	11.95	12.30
		1745 (132322)	11.92	12.26
		1712.5 (131997)	12.07	12.35
	1RB-Middle (12)	1777.5 (132647)	12.27	12.48
		1745 (132322)	12.22	12.45
		1712.5 (131997)	12.40	12.77
	1RB-Low (0)	1777.5 (132647)	11.92	12.32
		1745 (132322)	11.97	12.30
		1712.5 (131997)	12.15	12.53
	12RB-High (13)	1777.5 (132647)	12.07	12.07
		1745 (132322)	12.08	12.05
		1712.5 (131997)	12.28	12.27

	12RB-Middle (6)	1777.5 (132647)	12.15	12.09	
		1745 (132322)	12.15	12.15	
		1712.5 (131997)	12.33	12.31	
	12RB-Low (0)	1777.5 (132647)	12.09	12.07	
		1745 (132322)	12.09	12.08	
		1712.5 (131997)	12.27	12.27	
	25RB (0)	1777.5 (132647)	12.09	12.10	
		1745 (132322)	12.11	12.08	
		1712.5 (131997)	12.27	12.28	
10MHz	1RB-High (49)	1775 (132622)	11.98	12.30	
		1745 (132322)	11.99	12.32	
		1715 (132022)	12.14	12.55	
	1RB-Middle (24)	1775 (132622)	12.13	12.37	
		1745 (132322)	12.15	12.43	
		1715 (132022)	12.31	12.67	
	1RB-Low (0)	1775 (132622)	12.01	12.40	
		1745 (132322)	12.04	12.37	
		1715 (132022)	12.23	12.60	
	25RB-High (25)	1775 (132622)	12.08	12.09	
		1745 (132322)	12.08	12.09	
		1715 (132022)	12.29	12.30	
	25RB-Middle (12)	1775 (132622)	12.10	12.14	
		1745 (132322)	12.10	12.10	
		1715 (132022)	12.26	12.28	
	25RB-Low (0)	1775 (132622)	12.14	12.12	
		1745 (132322)	12.12	12.11	
		1715 (132022)	12.25	12.28	
	50RB (0)	1775 (132622)	12.10	12.11	
		1745 (132322)	12.10	12.09	
		1715 (132022)	12.27	12.27	
	15MHz	1RB-High (74)	1772.5 (132597)	12.00	12.33
			1745 (132322)	11.95	12.19
			1717.5 (132047)	12.05	12.25
1RB-Middle (37)		1772.5 (132597)	12.05	12.43	
		1745 (132322)	12.09	12.42	
		1717.5 (132047)	12.23	12.52	
1RB-Low (0)		1772.5 (132597)	11.98	12.33	
		1745 (132322)	12.00	12.33	
		1717.5 (132047)	12.20	12.54	
36RB-High (38)	1772.5 (132597)	12.08	12.07		
	1745 (132322)	12.07	12.06		
	1717.5 (132047)	12.22	12.21		

	36RB-Middle (19)	1772.5 (132597)	12.13	12.09
		1745 (132322)	12.13	12.07
		1717.5 (132047)	12.28	12.25
	36RB-Low (0)	1772.5 (132597)	12.17	12.08
		1745 (132322)	12.12	12.08
		1717.5 (132047)	12.26	12.26
	75RB (0)	1772.5 (132597)	12.09	12.10
		1745 (132322)	12.08	12.09
		1717.5 (132047)	12.24	12.25
20MHz	1RB-High (99)	1770 (132572)	11.88	12.09
		1745 (132322)	11.86	12.08
		1720 (132072)	11.95	12.21
	1RB-Middle (50)	1770 (132572)	12.10	12.43
		1745 (132322)	12.12	12.49
		1720 (132072)	12.22	12.61
	1RB-Low (0)	1770 (132572)	11.90	12.26
		1745 (132322)	11.95	12.32
		1720 (132072)	12.13	12.46
	50RB-High (50)	1770 (132572)	12.01	12.03
		1745 (132322)	12.03	12.06
		1720 (132072)	12.17	12.19
	50RB-Middle (25)	1770 (132572)	12.06	12.12
		1745 (132322)	12.07	12.10
		1720 (132072)	12.24	12.24
	50RB-Low (0)	1770 (132572)	12.14	12.17
		1745 (132322)	12.11	12.15
		1720 (132072)	12.21	12.21
	100RB (0)	1770 (132572)	12.09	12.07
		1745 (132322)	12.09	12.08
		1720 (132072)	12.16	12.20

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.



#### 11.4 Wi-Fi and BT Measurement result

The maximum output power of BT antenna is 10.42dBm.

The maximum tune up of BT antenna is 10.5dBm.

#### The average conducted power for Wi-Fi 2.4G is as following - DSI0

<b>802.11b</b>		
Channel\data rate	1Mbps	Tune up
11(2462MHz)	20.72	21.00
6(2437(MHz)	20.82	21.00
1(2412MHz)	20.69	21.00
<b>802.11g</b>		
Channel\data rate	6Mbps	Tune up
11(2462MHz)	17.82	19.00
10(2457MHz)	18.48	19.00
6(2437(MHz)	18.52	19.00
2(2432MHz)	18.49	19.00
1(2412MHz)	17.75	19.00
<b>802.11n-20MHz</b>		
Channel\data rate	MCS0	Tune up
11(2462MHz)	17.25	18.00
10(2457MHz)	18.28	19.00
6(2437(MHz)	18.33	19.00
2(2432MHz)	18.25	19.00
1(2412MHz)	16.96	18.00
<b>802.11n-40MHz</b>		
Channel\data rate	MCS0	Tune up
9(2452MHz)	13.49	14.50
6(2437MHz)	14.54	15.50
3(2422MHz)	13.55	14.50

**The average conducted power for Wi-Fi 2.4G is as following – DS11**

<b>802.11b</b>		
Channel\data rate	1Mbps	Tune up
11(2462MHz)	12.87	14.00
6(2437(MHz)	13.05	14.00
1(2412MHz)	12.77	14.00
<b>802.11g</b>		
Channel\data rate	6Mbps	Tune up
11(2462MHz)	9.95	11.50
10(2457MHz)	10.67	12.00
6(2437(MHz)	10.74	12.00
2(2432MHz)	11.05	12.00
1(2412MHz)	9.75	11.50
<b>802.11n-20MHz</b>		
Channel\data rate	MCS0	Tune up
11(2462MHz)	9.55	11.00
10(2457MHz)	10.47	12.00
6(2437(MHz)	10.61	12.00
2(2432MHz)	10.95	12.00
1(2412MHz)	9.19	11.00
<b>802.11n-40MHz</b>		
Channel\data rate	MCS0	Tune up
9(2452MHz)	8.21	9.00
6(2437MHz)	9.35	10.00
3(2422MHz)	8.68	9.00

**The tune up power for Wi-Fi 5G is as following – DSI0**

WiFi 802.11a (5GHz) Normal					
6Mbps~12Mbps					
Channel	Channel 36~64	Channel 100~108	Channel 112~124	Channel 128~144	Channel 149~165
Target (dBm)	16.5	15.5	15.5	15.5	17
Tune-up(dB)	16.5± 1	15.5± 1	15.5± 1	15.5±1	17± 1
18Mbps~54Mbps					
Data Rate	Channel 36~64	Channel 100~108	Channel 112~124	Channel 128~144	Channel 149~165
Target (dBm)	15.5	15.5	15.5	15.5	16.5
Tune-up(dB)	15.5± 1	15.5± 1	15.5± 1	15.5±1	16.5± 1

WiFi 802.11n-20 (5GHz) MCS0~MCS2						
Channel	Channel 36	Channel 40~48	Channel 52~64	Channel 100~108	Channel 112~124	Channel 128~144
Target (dBm)	15.5	15.5	15.5	15.5	15.5	15.5
Tune-up(dB)	15.5± 1	15.5± 1	15.5± 1	15.5± 1	15.5± 1	15.5± 1

WiFi 802.11n-20 (5GHz) MCS3~MCS7						
Channel	Channel 36	Channel 40~48	Channel 52~64	Channel 100~108	Channel 112~124	Channel 128~144
Target (dBm)	15.5	15.5	15.5	15.5	15.5	15.5
Tune-up(dB)	15.5± 1	15.5± 1	15.5± 1	15.5± 1	15.5± 1	15.5± 1

WiFi 802.11n-20 (5GHz) MCS0~MCS2				
Channel	Channel 149	Channel 153	Channel 157/161	Channel 165
Target (dBm)	17.5	17.5	17.5	17.5
Tune-up(dB)	17.5± 1	17.5± 1	17.5± 1	17.5± 1

WiFi 802.11n-20 (5GHz) MCS3~MCS7				
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Channel	Channel 149	Channel 153	Channel 157/161	Channel 165
Target (dBm)	16.5	16.5	16.5	16.5
Tune- up(dB)	16.5± 1	16.5± 1	16.5± 1	16.5± 1

WiFi 802.11n-40 (5GHz) MCS0~MCS5				
Channel	Channel 38~62	Channel 100~108	Channel 112~124	Channel 128~144
Target (dBm)	13	13	13	13
Tune- up(dB)	13± 1	13± 1	13± 1	13± 1

WiFi 802.11n-40 (5GHz) MCS6~MCS7				
Channel	Channel 38~62	Channel 100~108	Channel 112~124	Channel 128~144
Target (dBm)	13	13	13	13
Tune- up(dB)	13± 1	13± 1	13± 1	13± 1

WiFi 802.11n-40 (5.7GHz) MCS0~MCS5				
Channel	Channel 151	Channel 159		
Target (dBm)	12	12		
Tune- up(dB)	12± 1	12± 1		

WiFi 802.11n-40 (5.7GHz) MCS6~MCS7				
Channel	Channel 151	Channel 159		
Target (dBm)	12	12		
Tune- up(dB)	12± 1	12± 1		

WiFi 802.11ac-20 (5.2GHz)MCS0~2				
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Channel	Channel 36	Channel 40/44	Channel 48	Channel52	
Target (dBm)	15	15	15	15	
Tune-up(dB)	15± 1	15± 1	15± 1	15± 1	
WiFi 802.11ac-20 (5.2GHz)MCS3~MCS7					
Channel	Channel 36	Channel 40/44	Channel 48	Channel52	
Target (dBm)	15	15	15	15	
Tune-up(dB)	15± 1	15± 1	15± 1	15± 1	
WiFi 802.11ac-20 (5.2GHz)MCS8~9					
Channel	Channel 36	Channel 40/44	Channel 48	Channel52	
Target (dBm)	14.5	14.5	14.5	14.5	
Tune-up(dB)	14.5± 1	14.5± 1	14.5± 1	14.5± 1	
WiFi 802.11ac-20 (5.3GHz)MCS0~2					
Channel	Channel 56	Channel 60/64	Channel 100~136	Channel 140/144	
Target (dBm)	15	15	15	15	
Tune-up(dB)	15± 1	15± 1	15± 1	15± 1	
WiFi 802.11ac-20 (5.3GHz)MCS3~ MCS7					
Channel	Channel 56	Channel 60/64	Channel 100~136	Channel 140/144	
Target (dBm)	15	15	15	15	
Tune-up(dB)	15± 1	15± 1	15± 1	15± 1	
WiFi 802.11ac-20 (5.3GHz) MCS8~9					
Channel	Channel 56	Channel 60/64	Channel 100~136	Channel 140/144	
Target (dBm)	14.5	14.5	14.5	14.5	
Tune-up(dB)	14.5± 1	14.5± 1	14.5± 1	14.5± 1	
WiFi 802.11ac-20 (5.8GHz)MCS0~2					
Channel	Channel 149	Channel 153	Channel 157	Channel 161	Channel 165
Target (dBm)	17	17	17	17	17
Tune-up(dB)	17± 1	17± 1	17± 1	17± 1	17± 1
WiFi 802.11ac-20 (5.8GHz)MCS3~MCS7					

Channel	Channel 149	Channel 153	Channel 157	Channel 161	Channel 165
Target (dBm)	16	16	16	16	16
Tune-up(dB)	16± 1	16± 1	16± 1	16± 1	16± 1
WiFi 802.11ac-20 (5.8GHz)MCS8~9					
Channel	Channel 149	Channel 153	Channel 157	Channel 161	Channel 165
Target (dBm)	15	15	15	15	15
Tune-up(dB)	15± 1	15± 1	15± 1	15± 1	15± 1

WiFi 802.11ac-40 (5.2~5.3GHz) MCS0~ MCS5				
Channel	Channel 38~62	Channel 100~108	Channel 112~124	Channel 128~144
Target (dBm)	13.5	13.5	13.5	13.5
Tune-up(dB)	13.5± 1	13.5± 1	13.5± 1	13.5± 1
WiFi 802.11ac-40 (5.2~5.3GHz) MCS6~CS7				
Channel	Channel 38~62	Channel 100~108	Channel 112~124	Channel 128~144
Target (dBm)	13.5	13.5	13.5	13.5
Tune-up(dB)	13.5± 1	13.5± 1	13.5± 1	13.5± 1
WiFi 802.11ac-40 (5.2~5.3GHz) MCS8~9				
Channel	Channel 38~62	Channel 100~108	Channel 112~124	Channel 128~144
Target (dBm)	13	13	13	13
Tune-up(dB)	13± 1	13± 1	13± 1	13± 1
WiFi 802.11ac-40 (5.8GHz) MCS0~ MCS5				
Data Rate	Channel 151	Channel 159		

Target (dBm)	13	13		
Tune-up(dB)	13± 1	13± 1		
WiFi 802.11ac-40 (5.8GHz) MCS6~ MCS7				
Data Rate	Channel 151	Channel 159		
Target (dBm)	13	13		
Tune-up(dB)	13± 1	13± 1		
WiFi 802.11ac-40 (5.8GHz) MCS8~9				
Channel	Channel 151	Channel 159		
Target (dBm)	13	13		
Tune-up(dB)	13± 1	13± 1		

WiFi 802.11ac-80 MCS0~ MCS7				
Data Rate	Channel 42	Channel 58	Channel 106~138	Channel 155
Target (dBm)	13.5	13.5	13.5	13.5
Tune-up(dB)	13.5± 1	13.5± 1	13.5± 1	13.5± 1
WiFi 802.11ac-80 MCS8~S9				
Data Rate	Channel 42	Channel 58	Channel 106~138	Channel 155
Target (dBm)	12.5	12.5	12.5	12.5
Tune-up(dB)	12.5± 1	12.5± 1	12.5± 1	12.5± 1

The average conducted power for Wi-Fi 5G is as following – DSI0

<b>802.11a(dBm)</b>	
Channel\data rate	6Mbps
36(5180 MHz)	16.67
40(5200 MHz)	16.81
44(5220 MHz)	16.89
48(5240 MHz)	16.74
52(5260 MHz)	16.75
56(5280 MHz)	16.81
60(5300 MHz)	16.98
64(5320 MHz)	17.09
<b>Tune up</b>	<b>17.5</b>
100(5500 MHz)	15.23
104(5520 MHz)	15.37
108(5540 MHz)	15.26
112(5560 MHz)	15.16
116(5580 MHz)	15.26
120(5600 MHz)	15.47
124(5620 MHz)	15.53
128(5640 MHz)	15.78
132(5660 MHz)	15.62
136(5680 MHz)	15.58
140(5700 MHz)	15.81
144(5720 MHz)	15.65
<b>Tune up</b>	<b>16.5</b>
149(5745 MHz)	17.23
153(5765 MHz)	17.24
157(5785 MHz)	17.59
161(5805 MHz)	17.86
165(5825 MHz)	18.18
<b>Tune up</b>	<b>18.50</b>

<b>802.11n(dBm)-20MHz</b>	
149(5745 MHz)	17.23
153(5765 MHz)	17.24
157(5785 MHz)	17.59
161(5805 MHz)	17.86
165(5825 MHz)	18.18
<b>Tune up</b>	<b>18.50</b>



**The tune up power for Wi-Fi 5G is as following – DSI1**

WiFi 802.11a (5GHz) Low					
6Mbps~12Mbps					
Channel	Channel 36~64	Channel 100~104	Channel 108~124	Channel 128~144	Channel 149~165
Target (dBm)	6.5	6.5	6.5	6.5	7.5
Tune-up(dB)	6.5± 1	6.5± 1	6.5± 1	6.5±1	7.5± 1
18Mbps~54Mbps					
Data Rate	Channel 36~64	Channel 100~108	Channel 112~124	Channel 128~144	Channel 149~165
Target (dBm)	5.5	5.5	5.5	5.5	6.5
Tune-up(dB)	5.5± 1	5.5± 1	5.5± 1	5.5±1	6.5± 1

WiFi 802.11n-20 (5GHz) MCS0~MCS2						
Channel	Channel 36	Channel 40~48	Channel 52~64	Channel 100~108	Channel 112~124	Channel 128~144
Target (dBm)	7	7	7	7	7	7
Tune-up(dB)	7± 1	7± 1	7± 1	7± 1	7± 1	7± 1

WiFi 802.11n-20 (5GHz) MCS3~MCS7						
Channel	Channel 36	Channel 40~48	Channel 52~64	Channel 100~108	Channel 112~124	Channel 128~144
Target (dBm)	6	6	6	6	6	6
Tune-up(dB)	6± 1	6± 1	6± 1	6± 1	6± 1	6± 1

WiFi 802.11n-20 (5GHz) MCS0~MCS4				
Channel	Channel 149	Channel 153	Channel 157/161	Channel 165
Target (dBm)	8	8	8	8
Tune-up(dB)	8± 1	8± 1	8± 1	8± 1

WiFi 802.11n-20 (5GHz) MCS5~MCS7				
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Channel	Channel 149	Channel 153	Channel 157/161	Channel 165
Target (dBm)	7	7	7	7
Tune- up(dB)	7± 1	7± 1	7± 1	7± 1

WiFi 802.11n-40 (5GHz) MCS0~MCS5				
Channel	Channel 38~62	Channel 100~108	Channel 112~124	Channel 128~144
Target (dBm)	6	6	6	6
Tune- up(dB)	6± 1	6± 1	6± 1	6± 1

WiFi 802.11n-40 (5GHz) MCS6~MCS7				
Channel	Channel 38~62	Channel 100~108	Channel 112~124	Channel 128~144
Target (dBm)	5.5	5.5	5.5	5.5
Tune- up(dB)	5.5± 1	5.5± 1	5.5± 1	5.5± 1

WiFi 802.11n-40 (5.7GHz) MCS0~MCS4				
Channel	Channel 151	Channel 159		
Target (dBm)	6.5	6.5		
Tune- up(dB)	6.5± 1	6.5± 1		

WiFi 802.11n-40 (5.7GHz) MCS5~MCS7				
Channel	Channel 151	Channel 159		
Target (dBm)	6	6		
Tune- up(dB)	6± 1	6± 1		

WiFi 802.11ac-20 (5.2GHz)MCS0~2				
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Channel	Channel 36	Channel 40/44	Channel 48	Channel 52	
Target (dBm)	6.5	6.5	6.5	6.5	
Tune-up(dB)	6.5± 1	6.5± 1	6.5± 1	6.5± 1	
WiFi 802.11ac-20 (5.2GHz)MCS3~MCS7					
Channel	Channel 36	Channel 40/44	Channel 48	Channel 52	
Target (dBm)	6	6	6	6	
Tune-up(dB)	6± 1	6± 1	6± 1	6± 1	
WiFi 802.11ac-20 (5.2GHz)MCS8~9					
Channel	Channel 36	Channel 40/44	Channel 48	Channel 52	
Target (dBm)	6	6	6	6	
Tune-up(dB)	6± 1	6± 1	6± 1	6± 1	
WiFi 802.11ac-20 (5.3GHz)MCS0~2					
Channel	Channel 56	Channel 60/64	Channel 100~136	Channel 140/144	
Target (dBm)	6.5	6.5	6.5	6.5	
Tune-up(dB)	6.5± 1	6.5± 1	6.5± 1	6.5± 1	
WiFi 802.11ac-20 (5.3GHz)MCS3~ MCS7					
Channel	Channel 56	Channel 60/64	Channel 100~136	Channel 140/144	
Target (dBm)	6	6	6	6	
Tune-up(dB)	6± 1	6± 1	6± 1	6± 1	
WiFi 802.11ac-20 (5.3GHz) MCS8~9					
Channel	Channel 56	Channel 60/64	Channel 100~136	Channel 140/144	
Target (dBm)	6	6	6	6	
Tune-up(dB)	6± 1	6± 1	6± 1	6± 1	
WiFi 802.11ac-20 (5.8GHz)MCS0~2					
Channel	Channel 149	Channel 153	Channel 157	Channel 161	Channel 165
Target (dBm)	7.5	7.5	7.5	7.5	7.5
Tune-up(dB)	7.5± 1	7.5± 1	7.5± 1	7.5± 1	7.5± 1
WiFi 802.11ac-20 (5.8GHz)MCS3~MCS7					

Channel	Channel 149	Channel 153	Channel 157	Channel 161	Channel 165
Target (dBm)	7	7	7	7	7
Tune-up(dB)	7± 1	7± 1	7± 1	7± 1	7± 1
WiFi 802.11ac-20 (5.8GHz)MCS8~9					
Channel	Channel 149	Channel 153	Channel 157	Channel 161	Channel 165
Target (dBm)	7	7	7	7	7
Tune-up(dB)	7± 1	7± 1	7± 1	7± 1	7± 1

WiFi 802.11ac-40 (5.2~5.3GHz) MCS0~ MCS5				
Channel	Channel 38~62	Channel 100~108	Channel 112~124	Channel 128~144
Target (dBm)	7	7	7	7
Tune-up(dB)	7± 1	7± 1	7± 1	7± 1
WiFi 802.11ac-40 (5.2~5.3GHz) MCS6~CS7				
Channel	Channel 38~62	Channel 100~108	Channel 112~124	Channel 128~144
Target (dBm)	6	6	6	6
Tune-up(dB)	6± 1	6± 1	6± 1	6± 1
WiFi 802.11ac-40 (5.2~5.3GHz) MCS8~9				
Channel	Channel 38~62	Channel 100~108	Channel 112~124	Channel 128~144
Target (dBm)	5	5	5	5
Tune-up(dB)	5± 1	5± 1	5± 1	5± 1
WiFi 802.11ac-40 (5.8GHz) MCS0~ MCS5				
Data Rate	Channel 151	Channel 159		

Target (dBm)	6.5	6.5		
Tune-up(dB)	6.5± 1	6.5± 1		
WiFi 802.11ac-40 (5.8GHz) MCS6~ MCS7				
Data Rate	Channel 151	Channel 159		
Target (dBm)	5.5	5.5		
Tune-up(dB)	5.5± 1	5.5± 1		
WiFi 802.11ac-40 (5.8GHz) MCS8~9				
Channel	Channel 151	Channel 159		
Target (dBm)	6	6		
Tune-up(dB)	6± 1	6± 1		

WiFi 802.11ac-80 MCS0~ MCS7				
Data Rate	Channel 42	Channel 58		Channel 155
Target (dBm)	6	6		6
Tune-up(dB)	6± 1	6± 1		6± 1
WiFi 802.11ac-80 MCS8~S9				
Data Rate	Channel 42	Channel 58		Channel 155
Target (dBm)	5	5		6
Tune-up(dB)	5± 1	5± 1		6± 1

The average conducted power for Wi-Fi 5G is as following – DSI1

<b>802.11n(dBm)-20MHz</b>	
Channel\data rate	6Mbps
36(5180 MHz)	6.54
40(5200 MHz)	6.75
44(5220 MHz)	6.68
48(5240 MHz)	6.85
52(5260 MHz)	6.78
56(5280 MHz)	6.98
60(5300 MHz)	7.07
64(5320 MHz)	7.05
100(5500 MHz)	7.16
104(5520 MHz)	7.03
108(5540 MHz)	6.98
112(5560 MHz)	7.11
116(5580 MHz)	7.05
120(5600 MHz)	7.14
124(5620 MHz)	7.37
128(5640 MHz)	7.73
132(5660 MHz)	7.93
136(5680 MHz)	7.91
140(5700 MHz)	7.86
144(5720 MHz)	7.84
<b>Tune up</b>	<b>8.00</b>
149(5745 MHz)	7.36
153(5765 MHz)	7.28
157(5785 MHz)	7.42
161(5805 MHz)	7.56
165(5825 MHz)	7.95
<b>Tune up</b>	<b>9.00</b>

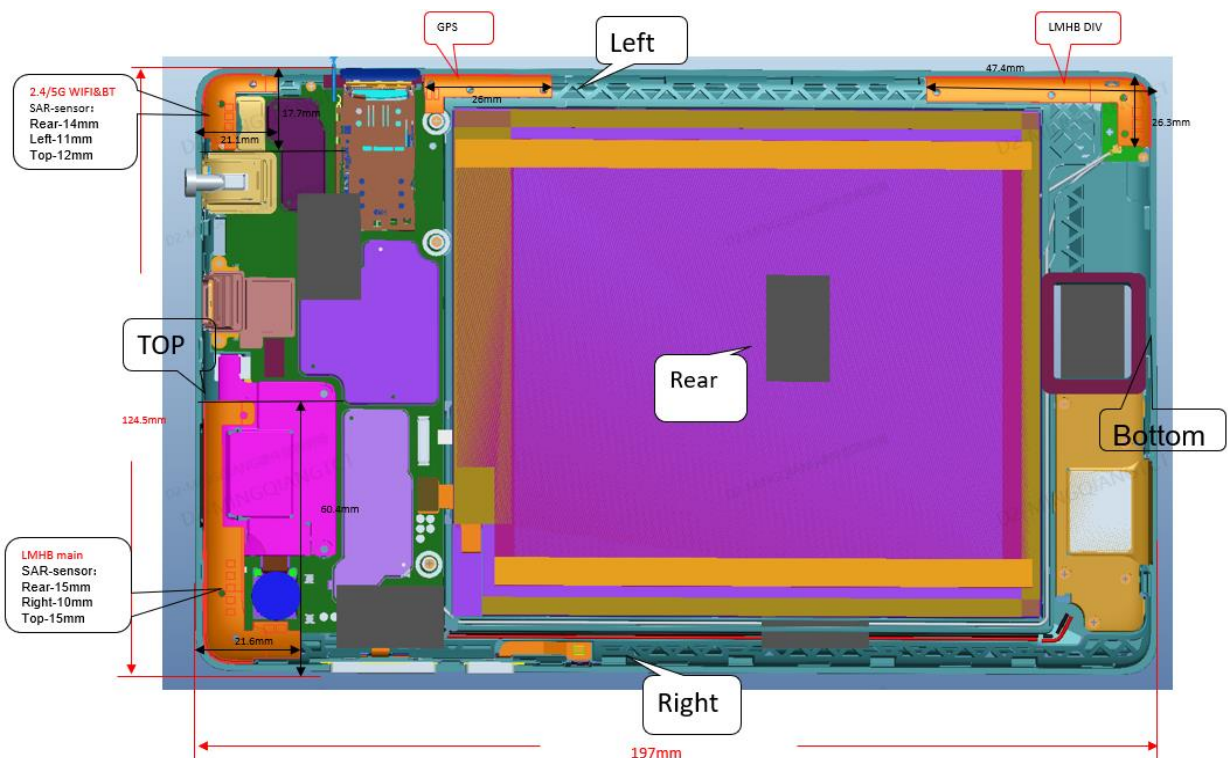
## 12 Simultaneous TX SAR Considerations

### 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 23 Antenna Locations

### 12.3 SAR Measurement Positions

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

SAR measurement positions						
Mode	Front	Rear	Left edge	Right edge	Top edge	Bottom edge
WWAN	No	Yes	No	Yes	Yes	No
WIFI ANT	No	Yes	Yes	No	Yes	No

### 13 Evaluation of Simultaneous

**Table 13.1: The sum of SAR values for Main antenna + WiFi-2.4G**

/	Position	Main antenna	WiFi-2.4G	Sum
<b>Highest SAR value for Body</b>	Rear 14mm (LTE B66)	1.22	0.21	<b>1.43</b>
	Top 14mm (LTE B66)	1.38	0.12	<b>1.50</b>
	Rear 0mm (LTE B12)	0.63	0.86	<b>1.49</b>
	Top 0mm (LTE B66)	1.05	0.36	<b>1.41</b>

**Table 13.2: The sum of SAR values for Main antenna + WiFi-5G +BT**

/	Position	Main antenna	WiFi-5G	BT	Sum
<b>Highest SAR value for Body</b>	Rear 14mm(WB4)	0.96	0.49	<0.01	<b>1.45</b>
	Top 14mm(WB2)	0.99	0.42	<0.01	<b>1.41</b>
	Top 0mm (WB4)	0.73	0.56	0.11	<b>1.40</b>

**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  $(SAR1 + SAR2)1.5/R_i$ , rounded to two decimal digits, and must be  $\leq 0.04$  for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion. When 10-g SAR applies, the ratio must be  $\leq 0.10$ . SAR1 and SAR2 are the highest reported or estimated SAR values for each antenna in the pair, and  $R_i$  is the separation distance in mm between the peak SAR locations for the antenna pair.

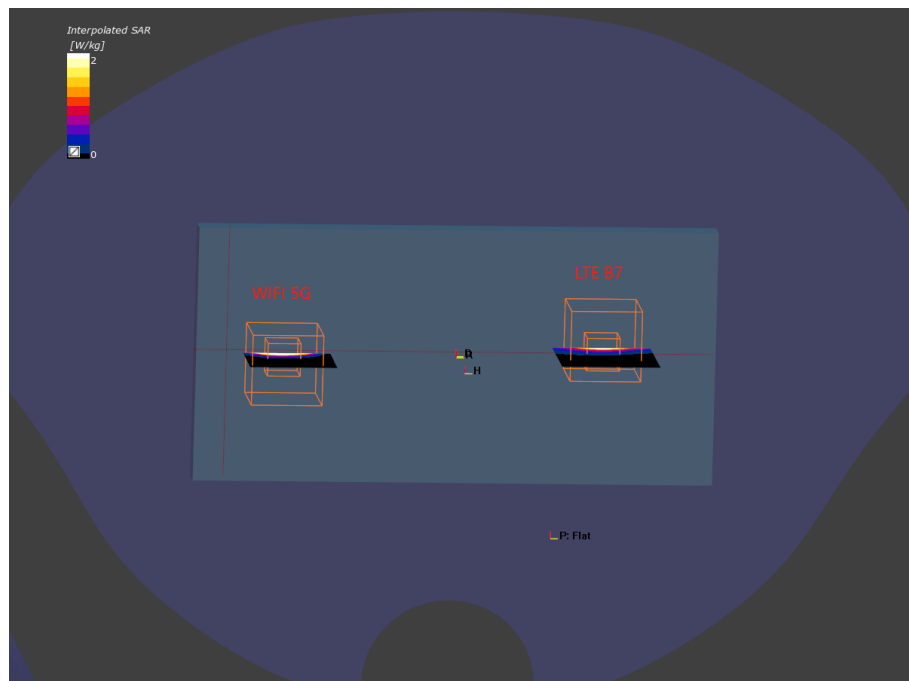
**Table 13.3: The sum of reported SAR values for WWAN + WiFi 2.4G (SPLSR)**

/	Position	Band	WWAN SAR1	WiFi SAR2	Sum (1g)	Distance (mm) $R_i$	Ratio	Limit
<b>Highest reported SAR value for Phablet</b>	Rear 0mm	WB4	1.03	0.86	<b>1.89</b>	94	0.028	$\leq 0.04$
	Rear 0mm	WB2	0.96	0.86	<b>1.82</b>	91	0.027	
	Rear 0mm	LTE B7	1.10	0.86	<b>1.96</b>	93	0.030	
	Rear 0mm	LTE B14	0.84	0.86	<b>1.70</b>	76	0.029	
	Rear 0mm	LTE B25	1.05	0.86	<b>1.91</b>	91	0.029	
	Rear 0mm	LTE B30	0.83	0.86	<b>1.69</b>	99	0.022	
	Rear 0mm	LTE B66	0.88	0.86	<b>1.74</b>	93	0.025	



**Table 13.4: The sum of reported SAR values for WWAN + WiFi 5G + BT (SPLSR)**

/	Position	Band	WWAN SAR1	WiFi SAR2	Sum (1g)	Distance (mm) Ri	Ratio	Limit
<b>Highest reported SAR value for Phablet</b>	Rear 0mm	WB4	1.03	1.26	<b>2.29</b>	96	0.036	≤0.04
	Rear 0mm	WB2	0.96	1.26	<b>2.22</b>	95	0.035	
	Rear 0mm	WB5	0.49	1.26	<b>1.75</b>	83	0.028	
	Rear 0mm	LTE B7	1.10	1.26	<b>2.36</b>	96	0.038	
	Rear 0mm	LTE B12	0.63	1.26	<b>1.89</b>	71	0.037	
	Rear 0mm	LTE B14	0.84	1.26	<b>2.10</b>	83	0.037	
	Rear 0mm	LTE B25	1.05	1.26	<b>2.31</b>	94	0.037	
	Rear 0mm	LTE B30	0.83	1.26	<b>2.09</b>	102	0.030	
	Rear 0mm	LTE B41 PC3	0.44	1.26	<b>1.70</b>	92	0.024	
	Rear 0mm	LTE B41 PC2	0.61	1.26	<b>1.87</b>	93	0.027	
	Rear 0mm	LTE B66	0.88	1.26	<b>2.14</b>	97	0.032	
	Top 0mm	WB2	0.95	0.67	<b>1.62</b>	82	0.025	
	Top 0mm	LTE B25	1.03	0.67	<b>1.70</b>	80	0.028	
	Top 14mm	WB4	1.27	0.42	<b>1.69</b>	85	0.026	
	Top 14mm	LTE B25	1.34	0.42	<b>1.76</b>	83	0.028	
	Top 14mm	LTE B66	1.36	0.42	<b>1.78</b>	87	0.027	
	Rear 14mm	WB4	1.18	0.49	<b>1.67</b>	89	0.024	
	Rear 14mm	LTE B66	1.22	0.49	<b>1.71</b>	87	0.026	


**Picture 13.1 SAR location for LTE B7 and WiFi 5G 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:

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

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

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

**Table 14.1: Duty Cycle**

Mode	Duty Cycle
WCDMA&LTE FDD	1:1
LTE TDD	1:1.58 or 1:2.37

### 14.1 SAR results for WWAN

**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	Note/Fig.No	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	WCDMA1900	9400	1880	Rear 14mm	/	23.24	24	0.589	0.70	0.344	0.41	0.08
Body	F	WCDMA1900	9400	1880	Right Edge 9mm	/	23.24	24	0.397	0.47	0.225	0.27	-0.17
Body	F	WCDMA1900	9538	1907.6	Top Edge 14mm	/	23.06	24	0.769	0.95	0.433	0.54	0.18
Body	F	WCDMA1900	9400	1880	Top Edge 14mm	/	23.24	24	0.716	0.85	0.403	0.48	0.07
Body	F	WCDMA1900	9262	1852.4	Top Edge 14mm	1	23.42	24	0.868	0.99	0.493	0.56	-0.06
Body	F	WCDMA1900	9538	1907.6	Rear 0mm	/	14.16	15	0.784	0.95	0.328	0.40	-0.17
Body	F	WCDMA1900	9400	1880	Rear 0mm	/	14.22	15	0.776	0.93	0.32	0.38	0.16
Body	F	WCDMA1900	9262	1852.4	Rear 0mm	/	14.42	15	0.843	0.96	0.341	0.39	-0.02
Body	F	WCDMA1900	9400	1880	Right Edge 0mm	/	14.22	15	0.257	0.31	0.127	0.15	0.12
Body	F	WCDMA1900	9538	1907.6	Top Edge 0mm	/	14.16	15	0.613	0.74	0.283	0.34	0.12
Body	F	WCDMA1900	9400	1880	Top Edge 0mm	/	14.22	15	0.61	0.73	0.281	0.34	0.09
Body	F	WCDMA1900	9262	1852.4	Top Edge 0mm	/	14.42	15	0.828	0.95	0.378	0.43	-0.02
Body	F	WCDMA1700	1513	1752.6	Rear 14mm	/	23.75	24	1.11	1.18	0.64	0.68	-0.06
Body	F	WCDMA1700	1412	1732.5	Rear 14mm	/	23.57	24	1.03	1.14	0.571	0.63	0.03
Body	F	WCDMA1700	1312	1712.4	Rear 14mm	/	23.46	24	1.03	1.17	0.569	0.64	-0.03
Body	F	WCDMA1700	1412	1732.5	Right Edge 9mm	/	23.57	24	0.462	0.51	0.241	0.27	-0.16
Body	F	WCDMA1700	1513	1752.6	Top Edge 14mm	/	23.75	24	1.14	1.21	0.651	0.69	-0.03
Body	F	WCDMA1700	1412	1732.5	Top Edge 14mm	2	23.57	24	1.15	1.27	0.656	0.72	-0.01
Body	F	WCDMA1700	1312	1712.4	Top Edge 14mm	/	23.46	24	1.02	1.16	0.57	0.65	-0.17
Body	F	WCDMA1700	1513	1752.6	Rear 0mm	/	12.86	13.5	0.891	1.03	0.347	0.40	0.01
Body	F	WCDMA1700	1412	1732.5	Rear 0mm	/	12.81	13.5	0.834	0.98	0.335	0.39	-0.09
Body	F	WCDMA1700	1312	1712.4	Rear 0mm	/	12.76	13.5	0.861	1.02	0.331	0.39	-0.11
Body	F	WCDMA1700	1412	1732.5	Right Edge 0mm	/	12.81	13.5	0.282	0.33	0.103	0.12	0.07
Body	F	WCDMA1700	1412	1732.5	Top Edge 0mm	/	12.81	13.5	0.627	0.73	0.274	0.32	-0.04
Body	F	WCDMA 850	4233	846.6	Rear 14mm	/	23.52	24	0.359	0.40	0.242	0.27	0.11
Body	F	WCDMA 850	4183	836.6	Rear 14mm	/	23.45	24	0.353	0.40	0.237	0.27	-0.06
Body	F	WCDMA 850	4132	826.4	Rear 14mm	/	23.37	24	0.344	0.40	0.229	0.26	0.07
Body	F	WCDMA 850	4183	836.6	Right Edge 9mm	/	23.45	24	0.159	0.18	0.097	0.11	0.11
Body	F	WCDMA 850	4183	836.6	Top Edge 14mm	/	23.45	24	0.189	0.21	0.123	0.14	0.17
Body	F	WCDMA 850	4233	846.6	Rear 0mm	3	15.19	16.5	0.362	0.49	0.173	0.23	0.01
Body	F	WCDMA 850	4183	836.6	Rear 0mm	/	15.17	16.5	0.356	0.48	0.165	0.22	-0.14
Body	F	WCDMA 850	4132	826.4	Rear 0mm	/	15.18	16.5	0.286	0.39	0.154	0.21	-0.11
Body	F	WCDMA 850	4183	836.6	Right Edge 0mm	/	15.01	16.5	0.159	0.22	0.104	0.15	-0.13
Body	F	WCDMA 850	4183	836.6	Top Edge 0mm	/	15.01	16.5	0.175	0.25	0.088	0.12	0.17

Note: The distance between the EUT and the phantom bottom is 9mm/14mm by sensor, the distance for other results is 0mm.



Table 14.1-2: SAR Values – LTE B7/B12/B14/B25

Test Position	Phantom position L/R/F	Frequency Band	Channel Number	Frequency (MHz)	Test setup/Position	Note/Fig.No	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	LTE Band7	20850	2510	1RB-Mid Rear 14mm	/	23.46	24	0.471	0.53	0.247	0.28	-0.15
Body	F	LTE Band7	20850	2510	1RB-Mid Right Edge 9mm	/	23.46	24	0.425	0.48	0.213	0.24	-0.07
Body	F	LTE Band7	20850	2510	1RB-Mid Top Edge 14mm	/	23.46	24	0.368	0.42	0.188	0.21	-0.03
Body	F	LTE Band7	20850	2510	50RB-Mid Rear 14mm	/	22.46	23	0.391	0.44	0.204	0.23	-0.03
Body	F	LTE Band7	20850	2510	50RB-Mid Right Edge 9mm	/	22.46	23	0.33	0.37	0.165	0.19	-0.06
Body	F	LTE Band7	20850	2510	50RB-Mid Top Edge 14mm	/	22.46	23	0.256	0.29	0.132	0.15	-0.18
Body	F	LTE Band7	20850	2510	1RB-Mid Rear 0mm	/	14.43	15.5	0.767	0.98	0.315	0.40	0.04
Body	F	LTE Band7	21100	2535	1RB-Mid Rear 0mm	/	14.31	15.5	0.8	1.05	0.326	0.43	-0.01
Body	F	LTE Band7	21350	2560	1RB-Mid Rear 0mm	4	14.29	15.5	0.831	1.10	0.34	0.45	0.02
Body	F	LTE Band7	21350	2560	100RB Rear 0mm	/	14.22	15.5	0.81	1.09	0.324	0.44	-0.14
Body	F	LTE Band7	20850	2510	1RB-Mid Right Edge 0mm	/	14.43	15.5	0.236	0.30	0.1	0.13	-0.09
Body	F	LTE Band7	20850	2510	1RB-Mid Top Edge 0mm	/	14.43	15.5	0.536	0.69	0.223	0.29	0.04
Body	F	LTE Band7	21350	2560	50RB-Mid Rear 0mm	/	14.26	15.5	0.745	0.99	0.323	0.43	-0.02
Body	F	LTE Band7	21100	2535	50RB-Mid Rear 0mm	/	14.29	15.5	0.703	0.93	0.311	0.41	-0.18
Body	F	LTE Band7	20850	2510	50RB-Mid Rear 0mm	/	14.46	15.5	0.649	0.82	0.288	0.37	-0.07
Body	F	LTE Band7	20850	2510	50RB-Mid Right Edge 0mm	/	14.46	15.5	0.233	0.30	0.103	0.13	0.14
Body	F	LTE Band7	20850	2510	50RB-Mid Top Edge 0mm	/	14.46	15.5	0.509	0.65	0.202	0.26	0.14
Body	F	LTE Band7	21350	2560	1RB-Mid Rear 0mm with cover	Note1	14.29	15.5	0.632	0.84	0.277	0.37	0.12
Body	F	LTE Band12	23060	704	1RB-Mid Rear 14mm	/	23.52	24.5	0.313	0.39	0.214	0.27	0.07
Body	F	LTE Band12	23060	704	1RB-Mid Right Edge 9mm	/	23.52	24.5	0.108	0.14	0.072	0.09	-0.16
Body	F	LTE Band12	23060	704	1RB-Mid Top Edge 14mm	/	23.52	24.5	0.187	0.23	0.126	0.16	-0.09
Body	F	LTE Band12	23060	704	25RB-Low Rear 14mm	/	22.53	23.5	0.237	0.30	0.162	0.20	0.1
Body	F	LTE Band12	23060	704	25RB-Low Right Edge 9mm	/	22.53	23.5	0.084	0.11	0.055	0.07	0.16
Body	F	LTE Band12	23060	704	25RB-Low Top Edge 14mm	/	22.53	23.5	0.153	0.19	0.105	0.13	-0.11
Body	F	LTE Band12	23130	711	1RB-Low Rear 0mm	/	18.53	19.5	0.482	0.60	0.275	0.34	-0.14
Body	F	LTE Band12	23130	711	1RB-Low Right Edge 0mm	/	18.53	19.5	0.282	0.35	0.13	0.16	0.01
Body	F	LTE Band12	23130	711	1RB-Low Top Edge 0mm	/	18.53	19.5	0.431	0.54	0.192	0.24	-0.09
Body	F	LTE Band12	23095	707.5	25RB-Low Rear 0mm	5	18.53	19.5	0.501	0.63	0.287	0.36	0.01
Body	F	LTE Band12	23095	707.5	25RB-Low Right Edge 0mm	/	18.53	19.5	0.25	0.31	0.129	0.16	0.12
Body	F	LTE Band12	23095	707.5	25RB-Low Top Edge 0mm	/	18.53	19.5	0.424	0.53	0.187	0.23	-0.07
Body	F	LTE Band14	23330	793	1RB-Low Rear 14mm	/	22.79	24	0.345	0.46	0.237	0.31	0.02
Body	F	LTE Band14	23330	793	1RB-Low Right Edge 9mm	/	22.79	24	0.113	0.15	0.074	0.10	-0.12
Body	F	LTE Band14	23330	793	1RB-Low Top Edge 14mm	/	22.79	24	0.266	0.35	0.176	0.23	0.17
Body	F	LTE Band14	23330	793	25RB-Low Rear 14mm	/	22.01	23	0.287	0.36	0.195	0.24	-0.11
Body	F	LTE Band14	23330	793	25RB-Low Right Edge 9mm	/	22.01	23	0.091	0.11	0.061	0.08	0.1
Body	F	LTE Band14	23330	793	25RB-Low Top Edge 14mm	/	22.01	23	0.219	0.28	0.144	0.18	0.08
Body	F	LTE Band14	23330	793	1RB-Mid Rear 0mm	6	17.66	18.5	0.696	0.84	0.298	0.36	0.02
Body	F	LTE Band14	23330	793	1RB-Mid Right Edge 0mm	/	17.66	18.5	0.298	0.36	0.134	0.16	-0.14
Body	F	LTE Band14	23330	793	1RB-Mid Top Edge 0mm	/	17.66	18.5	0.415	0.50	0.18	0.22	-0.12
Body	F	LTE Band14	23330	793	25RB-High Rear 0mm	/	17.98	18.5	0.682	0.77	0.293	0.33	-0.07
Body	F	LTE Band14	23330	793	25RB-High Right Edge 0mm	/	17.98	18.5	0.296	0.33	0.134	0.15	0.03
Body	F	LTE Band14	23330	793	25RB-High Top Edge 0mm	/	17.98	18.5	0.296	0.33	0.148	0.17	-0.03
Body	F	LTE Band25	26365	1882.5	1RB-Mid Rear 14mm	/	23.57	24.5	0.729	0.90	0.422	0.52	-0.13
Body	F	LTE Band25	26140	1860	1RB-Mid Rear 14mm	/	23.56	24.5	0.758	0.94	0.444	0.55	-0.02
Body	F	LTE Band25	26590	1905	1RB-Mid Rear 14mm	/	23.41	24.5	0.749	0.96	0.436	0.56	-0.16
Body	F	LTE Band25	26365	1882.5	1RB-Mid Right Edge 9mm	/	23.57	24.5	0.423	0.52	0.242	0.30	0.13
Body	F	LTE Band25	26140	1860	1RB-Mid Top Edge 14mm	7	23.56	24.5	1.08	1.34	0.611	0.76	-0.03
Body	F	LTE Band25	26365	1882.5	1RB-Mid Top Edge 14mm	/	23.57	24.5	1.07	1.33	0.608	0.75	-0.09
Body	F	LTE Band25	26590	1905	1RB-Mid Top Edge 14mm	/	23.41	24.5	0.924	1.19	0.526	0.68	0.18
Body	F	LTE Band25	26140	1860	100RB Top Edge 14mm	/	22.53	23.5	0.862	1.08	0.493	0.62	0.15
Body	F	LTE Band25	26365	1882.5	50RB-Low Rear 14mm	/	22.62	23.5	0.518	0.63	0.306	0.37	0.09
Body	F	LTE Band25	26365	1882.5	50RB-Low Right Edge 9mm	/	22.62	23.5	0.325	0.40	0.186	0.23	0.1
Body	F	LTE Band25	26590	1905	50RB-Low Top Edge 14mm	/	22.54	23.5	0.731	0.91	0.434	0.54	0.17
Body	F	LTE Band25	26365	1882.5	50RB-Low Top Edge 14mm	/	22.62	23.5	0.85	1.04	0.485	0.59	0.16
Body	F	LTE Band25	26140	1860	50RB-Low Top Edge 14mm	/	22.58	23.5	0.858	1.06	0.491	0.61	0.16
Body	F	LTE Band25	26590	1905	1RB-Mid Rear 0mm	/	13.92	15	0.761	0.98	0.332	0.43	0.02
Body	F	LTE Band25	26365	1882.5	1RB-Mid Rear 0mm	/	14.03	15	0.8	1.00	0.335	0.42	-0.06
Body	F	LTE Band25	26140	1860	1RB-Mid Rear 0mm	/	14.02	15	0.821	1.03	0.335	0.42	0.09
Body	F	LTE Band25	26140	1860	100RB Rear 0mm	/	13.9	15	0.777	1.00	0.326	0.42	-0.18
Body	F	LTE Band25	26365	1882.5	1RB-Mid Right Edge 0mm	/	14.03	15	0.214	0.27	0.111	0.14	-0.13
Body	F	LTE Band25	26590	1905	1RB-Mid Top Edge 0mm	/	13.92	15	0.694	0.89	0.319	0.41	0.12
Body	F	LTE Band25	26365	1882.5	1RB-Mid Top Edge 0mm	/	14.03	15	0.706	0.88	0.323	0.40	0.08
Body	F	LTE Band25	26140	1860	1RB-Mid Top Edge 0mm	/	14.02	15	0.818	1.03	0.374	0.47	-0.01
Body	F	LTE Band25	26140	1860	100RB Top Edge 0mm	/	13.9	15	0.786	1.01	0.353	0.45	0.11
Body	F	LTE Band25	26590	1905	50RB-Low Rear 0mm	/	14	15	0.789	0.99	0.334	0.42	0.14
Body	F	LTE Band25	26365	1882.5	50RB-Low Rear 0mm	/	14.02	15	0.792	0.99	0.325	0.41	0.01
Body	F	LTE Band25	26140	1860	50RB-Mid Rear 0mm	/	13.96	15	0.825	1.05	0.337	0.43	-0.09
Body	F	LTE Band25	26365	1882.5	50RB-Low Right Edge 0mm	/	14.02	15	0.216	0.27	0.11	0.14	0.04
Body	F	LTE Band25	26590	1905	50RB-Low Top Edge 0mm	/	14	15	0.69	0.87	0.318	0.40	0.1
Body	F	LTE Band25	26365	1882.5	50RB-Low Top Edge 0mm	/	14.02	15	0.73	0.91	0.332	0.42	0.12
Body	F	LTE Band25	26140	1860	50RB-Low Top Edge 0mm	/	13.96	15	0.795	1.01	0.363	0.46	-0.07

Note: The distance between the EUT and the phantom bottom is 9mm/14mm by sensor, the distance for other results is 0mm.

Note1: The result is for DUT with cover.

**Table 14.1-3: SAR Values – LTE B26/B30/B41 PC3/B41 PC2/B66**

Test Position	Phantom position L/R/F	Frequency Band	Channel Number	Frequency (MHz)	Test setup/Position	Note/Fig.No	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	LTE Band26	26775	822.5	1RB-Low Rear 14mm	/	23.07	24	0.347	<b>0.43</b>	0.235	<b>0.29</b>	-0.05
Body	F	LTE Band26	26775	822.5	1RB-Low Right Edge 9mm	/	23.07	24	0.134	<b>0.17</b>	0.088	<b>0.11</b>	0.01
Body	F	LTE Band26	26775	822.5	1RB-Low Top Edge 14mm	/	23.07	24	0.255	<b>0.32</b>	0.171	<b>0.21</b>	0.12
Body	F	LTE Band26	26775	822.5	36RB-Low Rear 14mm	/	22.19	23	0.288	<b>0.35</b>	0.194	<b>0.23</b>	-0.04
Body	F	LTE Band26	26775	822.5	36RB-Low Right Edge 9mm	/	22.19	23	0.105	<b>0.13</b>	0.069	<b>0.08</b>	0.17
Body	F	LTE Band26	26775	822.5	36RB-Low Top Edge 14mm	/	22.19	23	0.213	<b>0.26</b>	0.144	<b>0.17</b>	0.16
Body	F	LTE Band26	26775	822.5	1RB-Low Rear 0mm	/	17.06	18	0.397	<b>0.49</b>	0.207	<b>0.26</b>	-0.13
Body	F	LTE Band26	26775	822.5	1RB-Low Right Edge 0mm	/	17.06	18	0.259	<b>0.32</b>	0.13	<b>0.16</b>	0.1
Body	F	LTE Band26	26775	822.5	1RB-Low Top Edge 0mm	/	17.06	18	0.325	<b>0.40</b>	0.126	<b>0.16</b>	-0.02
Body	F	LTE Band26	26775	822.5	36RB-Low Rear 0mm	8	17.13	18	0.406	<b>0.50</b>	0.212	<b>0.26</b>	-0.03
Body	F	LTE Band26	26775	822.5	36RB-Low Right Edge 0mm	/	17.13	18	0.27	<b>0.33</b>	0.137	<b>0.17</b>	-0.03
Body	F	LTE Band26	26775	822.5	36RB-Low Top Edge 0mm	/	17.13	18	0.341	<b>0.42</b>	0.125	<b>0.15</b>	-0.1
Body	F	LTE Band30	27710	2310	1RB-Mid Rear 14mm	/	22.62	23.5	0.333	<b>0.41</b>	0.203	<b>0.25</b>	-0.15
Body	F	LTE Band30	27710	2310	1RB-Mid Right Edge 9mm	9	22.62	23.5	0.72	<b>0.88</b>	0.385	<b>0.47</b>	0.01
Body	F	LTE Band30	27710	2310	50RB Right Edge 9mm	/	21.61	22.5	0.557	<b>0.68</b>	0.286	<b>0.35</b>	0.12
Body	F	LTE Band30	27710	2310	1RB-Mid Top Edge 14mm	/	22.62	23.5	0.154	<b>0.19</b>	0.082	<b>0.10</b>	0.09
Body	F	LTE Band30	27710	2310	25RB-Low Rear 14mm	/	21.66	22.5	0.258	<b>0.31</b>	0.158	<b>0.19</b>	-0.12
Body	F	LTE Band30	27710	2310	25RB-Low Right Edge 9mm	/	21.66	22.5	0.563	<b>0.68</b>	0.302	<b>0.37</b>	0.07
Body	F	LTE Band30	27710	2310	25RB-Low Top Edge 14mm	/	21.66	22.5	0.127	<b>0.15</b>	0.068	<b>0.08</b>	-0.11
Body	F	LTE Band30	27710	2310	1RB-Mid Rear 0mm	/	13.41	14	0.722	<b>0.83</b>	0.272	<b>0.31</b>	-0.03
Body	F	LTE Band30	27710	2310	100RB Rear 0mm	/	13.4	14	0.712	<b>0.82</b>	0.267	<b>0.31</b>	0.04
Body	F	LTE Band30	27710	2310	1RB-Mid Right Edge 0mm	/	13.41	14	0.248	<b>0.28</b>	0.1	<b>0.11</b>	0.1
Body	F	LTE Band30	27710	2310	1RB-Mid Top Edge 0mm	/	13.41	14	0.193	<b>0.22</b>	0.084	<b>0.10</b>	0.09
Body	F	LTE Band30	27710	2310	25RB-Low Rear 0mm	/	13.45	14	0.705	<b>0.80</b>	0.264	<b>0.30</b>	0.05
Body	F	LTE Band30	27710	2310	25RB-Low Right Edge 0mm	/	13.45	14	0.173	<b>0.20</b>	0.079	<b>0.09</b>	0.14
Body	F	LTE Band30	27710	2310	25RB-Low Top Edge 0mm	/	13.45	14	0.239	<b>0.27</b>	0.095	<b>0.11</b>	0.1
Body	F	LTE B41 PC3	39750	2506	1RB-Mid Rear 14mm	/	23.17	24	0.243	<b>0.29</b>	0.124	<b>0.15</b>	-0.12
Body	F	LTE B41 PC3	39750	2506	1RB-Mid Right Edge 9mm	/	23.17	24	0.27	<b>0.33</b>	0.134	<b>0.16</b>	-0.01
Body	F	LTE B41 PC3	39750	2506	1RB-Mid Top Edge 14mm	/	23.17	24	0.179	<b>0.22</b>	0.09	<b>0.11</b>	0.13
Body	F	LTE B41 PC3	39750	2506	50RB-Mid Rear 14mm	/	22.03	23	0.183	<b>0.23</b>	0.094	<b>0.12</b>	0.13
Body	F	LTE B41 PC3	39750	2506	50RB-Mid Right Edge 9mm	/	22.03	23	0.199	<b>0.25</b>	0.096	<b>0.12</b>	-0.17
Body	F	LTE B41 PC3	39750	2506	50RB-Mid Top Edge 14mm	/	22.03	23	0.138	<b>0.17</b>	0.069	<b>0.09</b>	-0.05
Body	F	LTE B41 PC3	39750	2506	1RB-Mid Rear 0mm	10	15.33	16	0.377	<b>0.44</b>	0.158	<b>0.18</b>	-0.01
Body	F	LTE B41 PC3	39750	2506	1RB-Mid Right Edge 0mm	/	15.33	16	0.114	<b>0.13</b>	0.05	<b>0.06</b>	0.11
Body	F	LTE B41 PC3	39750	2506	1RB-Mid Top Edge 0mm	/	15.33	16	0.282	<b>0.33</b>	0.113	<b>0.13</b>	-0.03
Body	F	LTE B41 PC3	39750	2506	50RB-Mid Rear 0mm	/	15.21	16	0.343	<b>0.41</b>	0.145	<b>0.17</b>	0.05
Body	F	LTE B41 PC3	39750	2506	50RB-Mid Right Edge 0mm	/	15.21	16	0.102	<b>0.12</b>	0.045	<b>0.05</b>	-0.16
Body	F	LTE B41 PC3	39750	2506	50RB-Mid Top Edge 0mm	/	15.21	16	0.246	<b>0.30</b>	0.098	<b>0.12</b>	0.15
Body	F	LTE B41 PC2	39750	2506	1RB-Mid Rear 14mm	/	26.3	27	0.35	<b>0.41</b>	0.178	<b>0.21</b>	0.09
Body	F	LTE B41 PC2	39750	2506	1RB-Mid Right Edge 9mm	/	26.3	27	0.362	<b>0.43</b>	0.18	<b>0.21</b>	-0.04
Body	F	LTE B41 PC2	39750	2506	1RB-Mid Top Edge 14mm	/	26.3	27	0.235	<b>0.28</b>	0.121	<b>0.14</b>	0.13
Body	F	LTE B41 PC2	39750	2506	50RB-Mid Rear 14mm	/	25.32	26	0.25	<b>0.29</b>	0.132	<b>0.15</b>	-0.17
Body	F	LTE B41 PC2	39750	2506	50RB-Mid Right Edge 9mm	/	25.32	26	0.254	<b>0.30</b>	0.126	<b>0.15</b>	0.17
Body	F	LTE B41 PC2	39750	2506	50RB-Mid Top Edge 14mm	/	25.32	26	0.167	<b>0.20</b>	0.086	<b>0.10</b>	0.03
Body	F	LTE B41 PC2	39750	2506	1RB-Mid Rear 0mm	11	18.39	19	0.527	<b>0.61</b>	0.221	<b>0.25</b>	-0.08
Body	F	LTE B41 PC2	39750	2506	1RB-Mid Right Edge 0mm	/	18.39	19	0.207	<b>0.24</b>	0.077	<b>0.09</b>	-0.15
Body	F	LTE B41 PC2	39750	2506	1RB-Mid Top Edge 0mm	/	18.39	19	0.402	<b>0.46</b>	0.156	<b>0.18</b>	-0.16
Body	F	LTE B41 PC2	39750	2506	50RB-Mid Rear 0mm	/	18.28	19	0.475	<b>0.56</b>	0.199	<b>0.23</b>	-0.09
Body	F	LTE B41 PC2	39750	2506	50RB-Mid Right Edge 0mm	/	18.28	19	0.184	<b>0.22</b>	0.067	<b>0.08</b>	0.11
Body	F	LTE B41 PC2	39750	2506	50RB-Mid Top Edge 0mm	/	18.28	19	0.361	<b>0.43</b>	0.139	<b>0.16</b>	0.06
Body	F	LTE Band66	132072	1720	1RB-Mid Rear 14mm	/	23.4	24	1.03	<b>1.18</b>	0.579	<b>0.66</b>	-0.05
Body	F	LTE Band66	132322	1745	1RB-Mid Rear 14mm	/	23.38	24	1.06	<b>1.22</b>	0.613	<b>0.71</b>	0.01
Body	F	LTE Band66	132572	1770	1RB-Mid Rear 14mm	/	23.2	24	0.904	<b>1.09</b>	0.526	<b>0.63</b>	0.08
Body	F	LTE Band66	132072	1720	1RB-Mid Right Edge 9mm	/	23.4	24	0.474	<b>0.54</b>	0.246	<b>0.28</b>	-0.01
Body	F	LTE Band66	132072	1720	1RB-Mid Top Edge 14mm	/	23.4	24	1.16	<b>1.33</b>	0.65	<b>0.75</b>	-0.05
Body	F	LTE Band66	132322	1745	1RB-Mid Top Edge 14mm	12	23.38	24	1.2	<b>1.38</b>	0.681	<b>0.79</b>	-0.01
Body	F	LTE Band66	132572	1770	1RB-Mid Top Edge 14mm	/	23.2	24	1.11	<b>1.33</b>	0.633	<b>0.76</b>	0.12
Body	F	LTE Band66	132072	1720	50RB-Mid Rear 14mm	/	22.43	23	0.779	<b>0.89</b>	0.438	<b>0.50</b>	0.01
Body	F	LTE Band66	132322	1745	50RB-Mid Rear 14mm	/	22.29	23	0.826	<b>0.97</b>	0.478	<b>0.56</b>	0.13
Body	F	LTE Band66	132572	1770	50RB-Mid Rear 14mm	/	22.37	23	0.694	<b>0.80</b>	0.405	<b>0.47</b>	-0.15
Body	F	LTE Band66	132072	1720	50RB-Mid Right Edge 9mm	/	22.43	23	0.348	<b>0.40</b>	0.182	<b>0.21</b>	-0.06
Body	F	LTE Band66	132072	1720	50RB-Mid Top Edge 14mm	/	22.43	23	0.875	<b>1.00</b>	0.495	<b>0.56</b>	-0.17
Body	F	LTE Band66	132072	1720	1RB-Mid Rear 0mm	/	12.22	13	0.735	<b>0.88</b>	0.298	<b>0.36</b>	-0.14
Body	F	LTE Band66	132322	1745	1RB-Mid Rear 0mm	/	12.12	13	0.713	<b>0.87</b>	0.287	<b>0.35</b>	0.12
Body	F	LTE Band66	132572	1770	1RB-Mid Rear 0mm	/	12.1	13	0.674	<b>0.83</b>	0.274	<b>0.34</b>	-0.09
Body	F	LTE Band66	132072	1720	100RB Rear 0mm	/	12.16	13	0.703	<b>0.85</b>	0.278	<b>0.34</b>	0.11
Body	F	LTE Band66	132072	1720	1RB-Mid Right Edge 0mm	/	12.22	13	0.252	<b>0.30</b>	0.101	<b>0.12</b>	0.14
Body	F	LTE Band66	132072	1720	1RB-Mid Top Edge 0mm	/	12.22	13	0.579	<b>0.69</b>	0.255	<b>0.31</b>	-0.03
Body	F	LTE Band66	132072	1720	50RB-Mid Rear 0mm	/	12.24	13	0.729	<b>0.87</b>	0.287	<b>0.34</b>	0.07
Body	F	LTE Band66	132322	1745	50RB-Mid Rear 0mm	/	12.11	13	0.707	<b>0.87</b>	0.284	<b>0.35</b>	-0.11
Body	F	LTE Band66	132572	1770	50RB-Mid Rear 0mm	/	12.14	13	0.654	<b>0.80</b>	0.266	<b>0.32</b>	0.12
Body	F	LTE Band66	132072	1720	50RB-Mid Right Edge 0mm	/	12.24	13	0.264	<b>0.31</b>	0.113	<b>0.13</b>	0.07
Body	F	LTE Band66	132072	1720	50RB-Mid Top Edge 0mm	/	12.24	13	0.562	<b>0.67</b>	0.239	<b>0.28</b>	-0.11

Note: The distance between the EUT and the phantom bottom is 9mm/14mm by sensor, the distance for other results is 0mm.

## 14.2 SAR Evaluation for WIFI

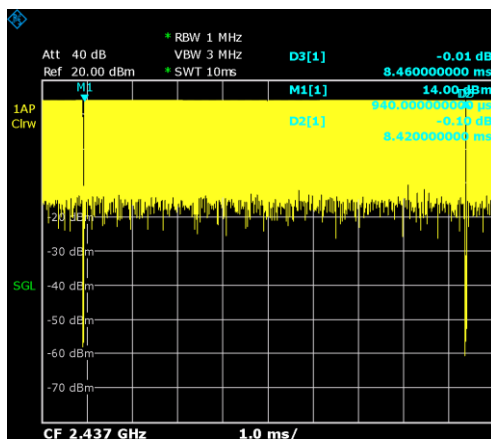
The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default 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.

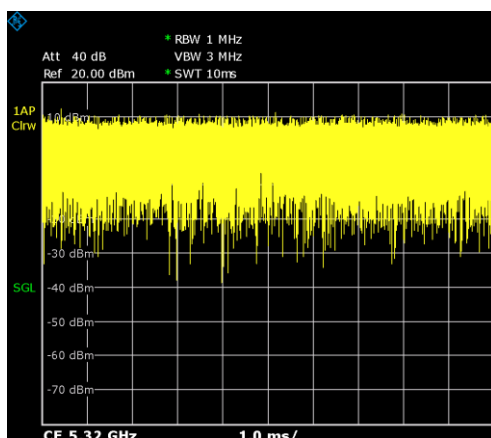
SAR Test reduction was applied from KDB 248227 guidance, when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band. Additional output power measurements were not deemed necessary.

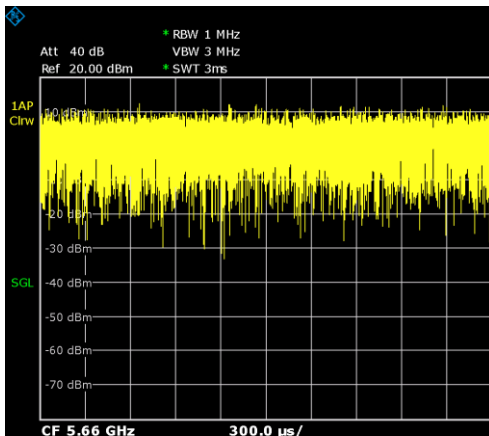
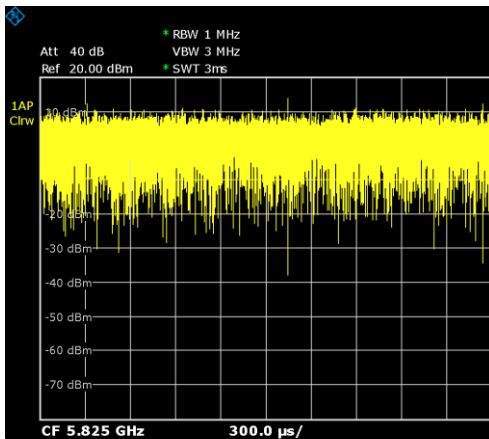
### Duty factor plot

#### CH6



#### CH64



**CH132**

**CH165**

**Table 14.2-1: SAR Values - WiFi 2.4G**

Test Position	Phantom position L/R/F	Frequency Band	Channel Number	Frequency (MHz)	Test setup/Position	Note/ Fig.No	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
<b>802.11b 1M</b>													
Body	F	WiFi2.4G	6	2437	Rear 13mm	/	20.82	21	0.247	<b>0.26</b>	0.128	<b>0.13</b>	-0.02
Body	F	WiFi2.4G	6	2437	Left 10mm	/	20.82	21	0.187	<b>0.19</b>	0.1	<b>0.10</b>	-0.08
Body	F	WiFi2.4G	6	2437	Top 11mm	/	20.82	21	0.153	<b>0.16</b>	0.078	<b>0.08</b>	-0.05
Body	F	WiFi2.4G	6	2437	Rear 14mm	Note1	20.82	21	0.2	<b>0.21</b>	0.106	<b>0.11</b>	0.04
Body	F	WiFi2.4G	6	2437	Top 14mm	Note1	20.82	21	0.116	<b>0.12</b>	0.064	<b>0.07</b>	-0.01
<b>802.11b 1M</b>													
Body	F	WiFi2.4G	11	2462	Rear 0mm	/	12.87	14	0.599	<b>0.78</b>	0.259	<b>0.34</b>	0.12
Body	F	WiFi2.4G	6	2437	Rear 0mm	13	13.05	14	0.688	<b>0.86</b>	0.296	<b>0.37</b>	-0.03
Body	F	WiFi2.4G	1	2412	Rear 0mm	/	12.77	14	0.636	<b>0.84</b>	0.275	<b>0.37</b>	0.09
Body	F	WiFi2.4G	6	2437	Left 0mm	/	13.05	14	0.345	<b>0.43</b>	0.143	<b>0.18</b>	-0.12
Body	F	WiFi2.4G	6	2437	Top 0mm	/	13.05	14	0.288	<b>0.36</b>	0.126	<b>0.16</b>	0.07

Note: The distance between the EUT and the phantom bottom is 11mm/13mm by sensor, the distance for other results is 0mm.

Note1: The results are only for WiFi transmit with WWAN.

**Table 14.2-2: SAR Values - WiFi 5G**

Test Position	Phantom position L/R/F	Frequency Band	Channel Number	Frequency (MHz)	Test setup/Position	Note/ Fig.No	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
<b>802.11a 6M</b>													
Body	F	WiFi5G	64	5320	Rear 13mm	/	17.09	17.5	0.388	<b>0.43</b>	0.146	<b>0.16</b>	-0.09
Body	F	WiFi5G	64	5320	Left 10mm	/	17.09	17.5	0.237	<b>0.26</b>	0.099	<b>0.11</b>	0.12
Body	F	WiFi5G	64	5320	Top 11mm	/	17.09	17.5	0.576	<b>0.63</b>	0.216	<b>0.24</b>	0.01
<b>802.11a 6M</b>													
Body	F	WiFi5G	140	5700	Rear 13mm	/	15.81	16.5	0.254	<b>0.30</b>	0.093	<b>0.11</b>	0.06
Body	F	WiFi5G	140	5700	Left 10mm	/	15.81	16.5	0.183	<b>0.21</b>	0.075	<b>0.09</b>	-0.15
Body	F	WiFi5G	140	5700	Top 11mm	/	15.81	16.5	0.382	<b>0.45</b>	0.144	<b>0.17</b>	-0.01
<b>802.11n-20M MCS0</b>													
Body	F	WiFi5G	165	5825	Rear 13mm	/	17.88	18.5	0.512	<b>0.59</b>	0.185	<b>0.21</b>	0.08
Body	F	WiFi5G	165	5825	Left 10mm	/	17.88	18.5	0.324	<b>0.37</b>	0.121	<b>0.14</b>	0.12
Body	F	WiFi5G	165	5825	Top 11mm	/	17.88	18.5	0.651	<b>0.75</b>	0.23	<b>0.27</b>	0.06
Body	F	WiFi5G	165	5825	Rear 14mm	Note1	17.88	18.5	0.421	<b>0.49</b>	0.149	<b>0.17</b>	0.08
Body	F	WiFi5G	165	5825	Top 14mm	Note1	17.88	18.5	0.361	<b>0.42</b>	0.147	<b>0.17</b>	0.01
<b>802.11n-20M MCS0</b>													
Body	F	WiFi5G	60	5300	Rear 0mm	/	7.07	8	0.685	<b>0.85</b>	0.128	<b>0.16</b>	0.09
Body	F	WiFi5G	64	5320	Rear 0mm	/	7.05	8	0.642	<b>0.80</b>	0.119	<b>0.15</b>	-0.17
Body	F	WiFi5G	60	5300	Left 0mm	/	7.07	8	0.253	<b>0.31</b>	0.074	<b>0.09</b>	0.11
Body	F	WiFi5G	60	5300	Top 0mm	/	7.07	8	0.408	<b>0.51</b>	0.082	<b>0.10</b>	-0.05
Body	F	WiFi5G	132	5660	Rear 0mm	14	7.93	8	0.985	<b>1.00</b>	0.194	<b>0.20</b>	-0.01
Body	F	WiFi5G	136	5680	Rear 0mm	/	7.91	8	0.953	<b>0.97</b>	0.191	<b>0.19</b>	0.1
Body	F	WiFi5G	132	5660	Left 0mm	/	7.93	8	0.287	<b>0.29</b>	0.088	<b>0.09</b>	0.09
Body	F	WiFi5G	132	5660	Top 0mm	/	7.93	8	0.388	<b>0.39</b>	0.081	<b>0.08</b>	-0.04
Body	F	WiFi5G	161	5805	Rear 0mm	/	7.56	8	0.63	<b>0.70</b>	0.126	<b>0.14</b>	-0.15
Body	F	WiFi5G	165	5825	Rear 0mm	/	7.95	8	0.857	<b>0.87</b>	0.179	<b>0.18</b>	0.11
Body	F	WiFi5G	165	5825	Left 0mm	/	7.95	8	0.306	<b>0.31</b>	0.083	<b>0.08</b>	-0.06
Body	F	WiFi5G	165	5825	Top 0mm	/	7.95	8	0.553	<b>0.56</b>	0.12	<b>0.12</b>	0.09

Note: The distance between the EUT and the phantom bottom is 11mm/13mm by sensor, the distance for other results is 0mm.

Note1: The results are only for WiFi transmit with WWAN.

### 14.3 WLAN Evaluation For BT

**Table 14.3-1: SAR Values (BT - Body)**

Test Position	Phantom position L/R/F	Frequency Band	Channel Number	Frequency (MHz)	Test setup/Position	Note/ Fig.No	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
<b>BR-DH5</b>													
Body	F	BT	78	2480	Rear 0mm	15	10.42	10.5	0.251	<b>0.26</b>	0.106	<b>0.11</b>	-0.06
Body	F	BT	78	2480	Left 0mm	/	10.42	10.5	0.135	<b>0.14</b>	0.057	<b>0.06</b>	0.12
Body	F	BT	78	2480	Top 0mm	/	10.42	10.5	0.107	<b>0.11</b>	0.049	<b>0.05</b>	-0.12
Body	F	BT	78	2480	Rear 14mm	Note1	10.42	10.5	<0.01	<0.01	<0.01	<0.01	/
Body	F	BT	78	2480	Top 14mm	Note1	10.42	10.5	<0.01	<0.01	<0.01	<0.01	/

Note1: The results are only for BT transmit with WWAN.

## 15 SAR Measurement Variability

SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium.

The following procedures are applied to determine if repeated measurements are required.

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

Band	Frequency		Test Position	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
	Ch.	MHz					
WCDMA B2	9262	1852.4	Top 14mm	0.868	0.847	1.02	/
WCDMA B2	9262	1852.4	Rear 0mm	0.843	0.821	1.03	/
WCDMA B4	1513	1752.6	Rear 14mm	1.11	1.08	1.03	/
WCDMA B4	9262	1852.4	Top 14mm	1.15	1.12	1.03	/
WCDMA B4	9262	1852.4	Rear 0mm	0.891	0.857	1.04	/
LTE B7	21350	2560	1RB-Mid Rear 0mm	0.831	0.815	1.02	/
LTE B25	26140	1860	1RB-Mid Top 14mm	1.08	1.07	1.01	/
LTE B25	26140	1860	50RB-Mid Rear 0mm	0.825	0.817	1.01	/
LTE B25	26140	1860	1RB-Mid Top 0mm	0.818	0.805	1.02	/
LTE B66	132322	1745	1RB-Mid Rear 14mm	1.06	1.05	1.01	/
LTE B66	132322	1745	1RB-Mid Top14mm	1.2	1.17	1.03	/
WIFI5G	132	5660	Rear 0mm	0.985	0.972	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
<b>Measurement system</b>										
1	Probe calibration	B	6.0	N	1	1	1	6.0	6.0	$\infty$
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	$\infty$
3	Boundary effect	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	$\infty$
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	$\infty$
5	Detection limit	B	1.0	N	1	1	1	0.6	0.6	$\infty$
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	$\infty$
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	$\infty$
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	$\infty$
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	$\infty$
10	RF ambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	$\infty$
11	Probe positioned mech. restrictions	B	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	$\infty$
12	Probe positioning with respect to phantom shell	B	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	$\infty$
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	$\infty$
<b>Test sample related</b>										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	$\infty$
<b>Phantom and set-up</b>										
17	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	$\infty$
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	$\infty$
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
20	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	$\infty$
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
<b>Measurement system</b>										
1	Probe calibration	B	6.55	N	1	1	1	6.55	6.55	$\infty$
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	$\infty$
3	Boundary effect	B	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	$\infty$
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	$\infty$
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	$\infty$
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	$\infty$
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	$\infty$
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	$\infty$
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	$\infty$
10	RFambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	$\infty$
11	Probe positioned mech. restrictions	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	$\infty$
12	Probe positioning with respect to phantom shell	B	6.7	R	$\sqrt{3}$	1	1	3.9	3.9	$\infty$
13	Post-processing	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	$\infty$
<b>Test sample related</b>										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	$\infty$
<b>Phantom and set-up</b>										
17	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	$\infty$
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	$\infty$
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
20	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	$\infty$

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
<b>Measurement system</b>										
1	Probe calibration	B	6.0	N	1	1	1	6.0	6.0	$\infty$
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	$\infty$
3	Boundary effect	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	$\infty$
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	$\infty$
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	$\infty$
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	$\infty$
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	$\infty$
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	$\infty$
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	$\infty$
10	RFambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	$\infty$
11	Probe positioned mech. Restrictions	B	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	$\infty$
12	Probe positioning with respect to phantom shell	B	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	$\infty$
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	$\infty$
14	Fast SAR z-Approximation	B	7.0	R	$\sqrt{3}$	1	1	4.0	4.0	$\infty$
<b>Test sample related</b>										
15	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
16	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
17	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	$\infty$
<b>Phantom and set-up</b>										
18	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	$\infty$
19	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	$\infty$

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	$\infty$
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
<b>Measurement system</b>										
1	Probe calibration	B	6.55	N	1	1	1	6.55	6.55	$\infty$
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	$\infty$
3	Boundary effect	B	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	$\infty$
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	$\infty$
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	$\infty$
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	$\infty$
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	$\infty$
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	$\infty$
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	$\infty$
10	RF ambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	$\infty$
11	Probe positioned mech. Restrictions	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	$\infty$
12	Probe positioning with respect to phantom shell	B	6.7	R	$\sqrt{3}$	1	1	3.9	3.9	$\infty$
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	$\infty$
14	Fast SAR z-Approximation	B	14.0	R	$\sqrt{3}$	1	1	8.1	8.1	$\infty$
<b>Test sample related</b>										
15	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
16	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5

17	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	$\infty$
<b>Phantom and set-up</b>										
18	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	$\infty$
19	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	$\infty$
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	$\infty$
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	January 5, 2023	One year
02	Power sensor	NRP110T	101139	January 13, 2023	One year
03	Power sensor	NRP110T	101159	January 13, 2023	One year
04	Signal Generator	E4438C	MY49071430	January 19, 2023	One year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	BTS	CMW500	159889	January 6, 2023	One year
07	E-field Probe	SPEAG EX3DV4	7727	June 5, 2023	One year
08	DAE	SPEAG DAE4	1807	May 15, 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 D2450V2	853	July 11,2023	One year
15	Dipole Validation Kit	SPEAG D2600V2	1012	July 11,2023	One year
16	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 SAR Sensor Triggering Data Summary**
- ANNEX J Accreditation Certificate**