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## TEST REPORT FOR SAR TESTING

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Report No.: SRTC2019-9004(F)-19051701(H)

Product Name: LTE/Multi-Mode Digital Mobile Phone

Product Model: ZTE Axon 10 Pro

Marketing Name: ZTE Axon 10 Pro

Applicant: ZTE Corporation

Manufacturer: ZTE Corporation

Specification: Part 2.1093

IEEE Std 1528

KDB Procedures

FCC ID: SRQ-AXON10PRO

The State Radio\_monitoring\_center Testing Center (SRTC)

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## **1. GENERAL INFORMATION**

### **1.1 Notes of the test report**

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### **1.2 Information about the testing laboratory**

Company:	The State Radio_monitoring_center Testing Center (SRTC)
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### **1.3 Applicant's details**

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Country or Region:	China
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### **1.4 Manufacturer's details**

Company:	ZTE Corporation
Address:	ZTE Plaza, #55 Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Guangdong
City:	Shenzhen
Country or Region:	China
Contacted person:	Gong Yu
Tel:	021-68895397
Fax:	---
Email:	gongyu@zte.com.cn

## 1.5 Test Environment

Date of Receipt of test sample at SRTC:	2019.05.17
Testing Start Date:	2019.05.20
Testing End Date:	2019.06.06

Environmental Data:	Temperature (°C)	Humidity (%)
Ambient	22	35

Normal Supply Voltage (Vdc.):	3.7
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## 2. DESCRIPTION OF THE DEVICE UNDER TEST

### 2.1 Final Equipment Build Status

Wireless Technology and Frequency Bands	<input checked="" type="checkbox"/> GSM Band: GSM850/PCS1900 <input checked="" type="checkbox"/> WCDMA Band: FDD II/V <input checked="" type="checkbox"/> LTE Band: 2/4/5/7/12/13/66 <input checked="" type="checkbox"/> Bluetooth Band: 2.4GHz <input checked="" type="checkbox"/> Wi-Fi Band: 2.4GHz/5.2GHz/5.8GHz
Mode	GSM <input checked="" type="checkbox"/> Voice (GMSK) <input checked="" type="checkbox"/> GPRS (GMSK) <input checked="" type="checkbox"/> EGPRS (GMSK) WCDMA <input checked="" type="checkbox"/> UMTS Rel. 99 (Voice & Data) <input checked="" type="checkbox"/> HSDPA (Rel. 5) <input checked="" type="checkbox"/> HSUPA (Rel. 6) <input checked="" type="checkbox"/> HSPA+ (Rel.7) <input checked="" type="checkbox"/> DC-HSDPA (Rel.8) Wi-Fi 2.4GHz <input checked="" type="checkbox"/> 802.11b <input checked="" type="checkbox"/> 802.11g <input checked="" type="checkbox"/> 802.11n (20MHz/40MHz) Wi-Fi 5GHz <input checked="" type="checkbox"/> 802.11a <input checked="" type="checkbox"/> 802.11an (20MHz/40MHz) <input checked="" type="checkbox"/> 802.11ac (20MHz/40MHz/80MHz) Bluetooth <input checked="" type="checkbox"/> BR(GFSK) <input checked="" type="checkbox"/> EDR ( $\pi/4$ DQPSK, 8-DPSK) <input checked="" type="checkbox"/> BLE(GFSK) LTE <input checked="" type="checkbox"/> QPSK <input checked="" type="checkbox"/> 16QAM <input checked="" type="checkbox"/> 64QAM
Duty Cycle	GSM Voice: 12.5%; GPRS: 12.5% (1 Slot), 25% (2 Slots), 37.5% (3 Slots), 50% (4 Slots) WCDMA: 100% Bluetooth: 32.25% (DH1), 66.68% (DH3), 77.52% (DH5) Wi-Fi 2.4GHz: 802.11b: 99.24%/11g: 98.14%/11n 20: 98.01%/11n40: 94.63% Wi-Fi 5GHz: 11a: 95.72%/11n20: 97.98%/11n40: 96.03%/11ac20: 97.78%/11ac40: 96.16%/11ac80: 92.44%
GPRS/EGPRS Multi-Slot Class	<input type="checkbox"/> Class 8 - One Up <input type="checkbox"/> Class 10 - Two Up <input checked="" type="checkbox"/> Class 12 - Four Up <input type="checkbox"/> Class 33 - Four Up
Mobile Phone Capability	<input type="checkbox"/> Class A - Mobile phones can be connected to both GPRS and GSM services simultaneously. <input checked="" type="checkbox"/> Class B - Mobile phones can be attached to both GPRS and GSM services, using one service at a time. <input type="checkbox"/> Class C - Mobile phones are attached to either GPRS or GSM voice service. You need to switch manually between services
DTM	Not Supported

## **2.2 Support Equipment**

The following support equipment was used to exercise the DUT during testing:

State of sample	Normal
Batteries	Li3939T44P8h756547/Zhuhai Coslight Battery Co., Ltd.
Headset1	DTM-02//JWEP1053-Z01R/Shen Zhen FDC Electronic Co., Ltd.
Headset2	DTM-02//JWEP1053-Z01R/JUWEI ELECTRONICS CO., LTD
H/W Version S/W Version	twfB TEL_MX_ZTE_Axon_10_ProV1.0
IMEI	865174040000116
Notes	As the information described above, we use test sample offered by the customer. The relevant tests have been performed in order to verify in which combination case the EUT would have the worst features.

## **3. REFERENCE SPECIFICATION**

Specification	Version	Title
Part 2.1093	2019	Radiofrequency radiation exposure evaluation: portable devices.
IEEE Std 1528	2013	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
IEEE Std 1528a	2005	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques Amendment 1: CAD File for Human Head Model (SAM Phantom)
KDB 447498 D01	v06	General RF Exposure Guidance
KDB 648474 D04	v01r03	Handset SAR
KDB 941225 D01	v03r01	3G SAR Procedures
KDB 248227 D01	v02r02	SAR GUIDANCE FOR IEEE 802.11 (Wi-Fi) TRANSMITTERS
KDB 865664 D01	v01r04	SAR Measurement from 100 MHz to 6 GHz
KDB 865664 D02	v01r02	RF Exposure Reporting
KDB 941225 D05	v02r05	SAR for LTE Devices
KDB 941225 D05A	v01r02	LTE Rel.10 KDB Inquiry Sheet

## **4. TEST CONDITIONS**

### **4.1 Picture to demonstrate the required liquid depth**

The liquid depth in the used SAM phantoms



Liquid depth for SAR Measurement

### **4.2 Test Signal, Frequencies and Output Power**

The device was put into operation by using a call tester. Communication between the device and the call tester was established by air link.

The device output power was set to maximum power level for all tests; a fully charged battery was used for every test sequence.

In all operating bands the measurements were performed on middle channel, and few of them were also performed on lowest and highest channels.

### **4.3 SAR Measurement Set-up**

The system is based on a high precision robot (working range greater than 0.9m), which positions the probes with a positional repeatability of better than  $\pm 0.02\text{mm}$ . Special E-field probes have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines (length =300mm) to the data acquisition unit. A cell controller system contains the power supply, robot controller, teaches pendant (Joystick), and remote control, is used to drive the robot motors.

The PC consists of the Micron Pentium IV computer with Win7 system and SAR Measurement Software DASY5 Professional, A/D interface card, monitor, mouse, and

keyboard. The Stäubli Robot is connected to the cell controller to allow software manipulation of the robot.

A data acquisition electronic (DAE) circuit performs the signal amplification; signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card. The DAE consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines.

The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection

The robot uses its own controller with a built in VME-bus computer.

#### **4.4 Phantoms**

The phantom used for all tests i.e. for both system checks and device testing, was the twin headed "SAM Phantom", manufactured by SPEAG. The phantom conforms to the requirements of IEEE 1528 - 2013.

System checking was performed using the flat section, whilst Head SAR tests used the left and right head profile sections. Body SAR testing also used the flat section between the head profiles.

The SPEAG device holder (see Section 5.1) was used to position the device in all tests whilst a tripod was used to position the validation dipoles against the flat section of phantom.

#### **4.5 Tissue Simulants**

Recommended values for the dielectric parameters of the tissue simulants are given in IEEE 1528 - 2013 and FCC Supplement C to OET Bulletin 65. All tests were carried out using simulants whose dielectric parameters were within  $\pm 5\%$  of the recommended values. All tests were carried out within 24 hours of measuring the dielectric parameters.

The depth of the tissue simulant was  $15.0 \pm 0.5$  cm measured from the ear reference point during system checking and device measurements.



### 4.5.1 Tissue Stimulant Recipes

The following tissue stimulants were used for Head and Body test:

Name	Broadband tissue-equivalent liquid
Type for Head	HBBL600-6000V6 Head Simulating Liquid
Type for Body	MBBL600-6000V6 Body Simulating Liquid

## 4.6 DESCRIPTION OF THE TEST PROCEDURE

### 4.6.1 Device Holder

The device was placed in the device holder (illustrated below) that is supplied by SPEAG as an integral part of the Dasy5 system.



**Device holder supplied by SPEAG**

## 4.6.2 Test positions

### 4.6.2.1 Against Phantom Head

Measurements were made in “cheek” and “tilt” positions on both the left hand and right-hand sides of the phantom.

The positions used in the measurements were according to IEEE 1528 - 2013 "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques".

### 4.6.2.2 Body Worn Configuration

The device was placed in the SPEAG holder below the flat section of the phantom. The distance between the device and the phantom was kept at the separation distance using a separate flat spacer that was removed before the start of the measurements. And the distance is 10mm. The device was oriented with its antenna facing the phantom since this orientation gives higher results.

## 4.6.3 Scan Procedure

First, area scans were used for determination of the field distribution and the approximate location of the local peak SAR values. The SAR distribution is scanned along the inside surface, at least for an area larger than the projection of the handset and antenna. The angle between the probe axis and the surface normal line is recommended but not required to be less than 30°. The SAR distribution is first measured on a 2-D coarse grid. The scan region should cover all areas that are exposed and encompassed by the projection of the handset. There are 15 mm × 15 mm (equal or less than 2GHz), 12 mm × 12 mm (from 2GHz~3GHz) and 10mm x 10mm (above 5GHz) measurement grid used when two staggered one-dimensional cubic splines are used to estimate the maximum SAR location. Next, a zoom scan, a minimum of 7x7x7 points covering a volume of at least 30x30x30mm, was performed around the highest E-field value to determine the averaged SAR value. Drift was determined by measuring the same point at the start of the area scan and again at the end of the zoom scan.

## 4.6.4 SAR Averaging Methods

The maximum SAR value was averaged over a cube of tissue using interpolation and extrapolation.

The interpolation, extrapolation and maximum search routines within DASY5 are all based on the modified Quadratic Shepard's method (Robert J. Renka, Multivariate Interpolation of Large Sets of Scattered Data", University of North Texas ACM Transactions on Mathematical Software, vol. 14, no. 2, June 1988, pp. 139-148).

The interpolation scheme combines a least-square fitted function method with a weighted average method. A triradiate 3-D / bivariate 2-D quadratic function is computed for each measurement point and fitted to neighboring points by a least-square method. For the zoom scan, inverse distance weighting is incorporated to fit distant points more accurately. The interpolating function is finally calculated as a weighted average of the quadratics.

In the zoom scan, the interpolation function is used to extrapolate the Peak SAR from the deepest measurement points to the inner surface of the phantom.

## 5 RESULT SUMMARY



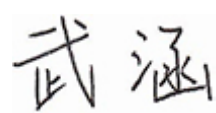
The maximum reported SAR values for Head configuration and Body Worn configuration are given as follows. The device conforms to the requirements of the standard(s) when the maximum reported SAR value is less than or equal to the limit.

Exposure Position	Frequency Band	1g-SAR Result(W/kg)	Highest 1g-SAR Result(W/kg)		Limit	Result
					(W/kg)/1g	
Head	GSM 850	1.09	1.20	1.20	1.6	Pass
	GSM 1900	1.04				
	WCDMA Band 2	0.98				
	WCDMA Band 5	1.04				
	LTE Band 2	0.74				
	LTE Band 4	1.20				
	LTE Band 5	0.94				
	LTE Band 7	1.17				
	LTE Band 12	1.00				
	LTE Band 13	0.63				
	LTE Band 66	1.08				
	BT/BLE 2.4GHz Band	0.01				
	WLAN 2.4GHz-1	1.19				
	WLAN 2.4GHz-2	0.57				
	WLAN 2.4GHz-MIMO	0.49				
	WLAN 5GHz Band1-1	0.30				
	WLAN 5GHz Band1-2	0.12				
	WLAN 5GHz Band1-MIMO	0.36				
	WLAN 5GHz Band3-1	0.40				
WLAN 5GHz Band3-2	0.01					
WLAN 5GHz Band3-MIMO	0.42					
Body-Worn (10mm Gap)	GSM 850	0.37	1.01	1.20	1.6	Pass
	GSM 1900	0.35				
	WCDMA Band 2	0.79				
	WCDMA Band 5	0.44				
	LTE Band 2	1.01				
	LTE Band 4	0.86				
	LTE Band 5	0.50				
	LTE Band 7	0.80				
	LTE Band 12	0.29				
	LTE Band 13	0.33				
	LTE Band 66	0.75				
	BT/BLE 2.4GHz Band	0.00				
	WLAN 2.4GHz-1	0.29				
	WLAN 2.4GHz-2	0.28				
	WLAN 2.4GHz-MIMO	0.22				
	WLAN 5GHz Band1-1	0.13				
	WLAN 5GHz Band1-2	0.06				
	WLAN 5GHz Band1-MIMO	0.15				
	WLAN 5GHz Band3-1	0.21				
WLAN 5GHz Band3-2	0.19					
WLAN 5GHz Band3-MIMO	0.19					

Exposure Position	Frequency Band	1g-SAR Result(W/kg)	Highest 1g-SAR Result(W/kg)		Limit	Result
					(W/kg)/1g	
Hotspot (10mm Gap)	GSM 850	0.37	1.01	1.01	1.6	Pass
	GSM 1900	0.43				
	WCDMA Band 2	0.85				
	WCDMA Band 5	0.44				
	LTE Band 2	1.01				
	LTE Band 4	0.86				
	LTE Band 5	0.50				
	LTE Band 7	0.80				
	LTE Band 12	0.75				
	LTE Band 13	0.33				
	LTE Band 66	0.75				
	WLAN 2.4GHz-1	0.58				
	WLAN 2.4GHz-2	0.28				
	WLAN 2.4GHz-MIMO	0.30				
	WLAN 5GHz Band1-1	0.19				
	WLAN 5GHz Band1-2	0.06				
	WLAN 5GHz Band1-MIMO	0.19				
	WLAN 5GHz Band3-1	0.21				
	WLAN 5GHz Band3-2	0.19				
WLAN 5GHz Band3-MIMO	0.19					

Simultaneous Transmission Summary

Exposure Position	Frequency Band	1g-SAR Result (W/kg)	Highest 1g-SAR Result(W/kg)	Limit (W/kg)/1g	Result
Head	GSM & Wi-Fi (2.4G/5G)	1.56	1.56	1.6	pass
	WCDMA & Wi-Fi (2.4G/5G)	1.49			
	LTE & Wi-Fi (2.4G/5G)	1.55			
	GSM & BT/BLE&Wi-Fi 5G	1.51			
	WCDMA & BT/BLE&Wi-Fi 5G	1.44			
	LTE & BT/BLE&Wi-Fi 5G	1.56			
Body-Worn (10mm Gap)	GSM & Wi-Fi (2.4G/5G)	0.67	1.31	1.6	pass
	WCDMA & Wi-Fi (2.4G/5G)	1.08			
	LTE & Wi-Fi (2.4G/5G)	1.31			
	GSM & BT/BLE&Wi-Fi 5G	0.58			
	WCDMA & BT/BLE&Wi-Fi 5G	1.00			
	LTE & BT/BLE&Wi-Fi 5G	1.23			
hotspot (10mm Gap)	GSM & Wi-Fi (2.4G/5G)	0.76	1.31	1.6	pass
	WCDMA & Wi-Fi (2.4G/5G)	1.08			
	LTE & Wi-Fi (2.4G/5G)	1.31			

This Test Report Is Issued by: Mr. Peng Zhen 	Checked by: Mr. Li Bin 
Tested by: Miss. Wu Han 	Issued date: 20190613

## 6 TEST RESULT

### 6.1 Manufacturing Tolerance

#### Up Antenna

#### GSM

GSM 850			
Channel	Channel 128	Channel 189	Channel 251
Tolerance (dBm)	29.0~33.0	29.0~33.0	29.0~33.0

GSM 850 GPRS				
Channel		128	189	251
1 Txslot	Tolerance (dBm)	29.0~33.0	29.0~33.0	29.0~33.0
2 Txslot	Tolerance (dBm)	27.0~31.0	27.0~31.0	27.0~31.0
3 Txslot	Tolerance (dBm)	25.5~29.5	25.5~29.5	25.5~29.5
4 Txslot	Tolerance (dBm)	23.5~27.5	23.5~27.5	23.5~27.5

GSM 850 EGPRS(GMSK)				
Channel		128	189	251
1 Txslot	Tolerance (dBm)	29.0~33.0	29.0~33.0	29.0~33.0
2 Txslot	Tolerance (dBm)	27.0~31.0	27.0~31.0	27.0~31.0
3 Txslot	Tolerance (dBm)	25.5~29.5	25.5~29.5	25.5~29.5
4 Txslot	Tolerance (dBm)	23.5~27.5	23.5~27.5	23.5~27.5

GSM 850 EGPRS(8PSK)				
Channel		128	189	251
1 Txslot	Tolerance (dBm)	22.5~26.5	22.5~26.5	22.5~26.5
2 Txslot	Tolerance (dBm)	22.5~26.5	22.5~26.5	22.5~26.5
3 Txslot	Tolerance (dBm)	22.0~26.0	22.0~26.0	22.0~26.0
4 Txslot	Tolerance (dBm)	21.5~25.5	21.5~25.5	21.5~25.5

GSM 1900			
Channel	Channel 512	Channel 661	Channel 810
Tolerance (dBm)	25.5~29.5	25.5~29.5	25.5~29.5

GSM 1900 GPRS				
Channel		512	661	810
1 Txslot	Tolerance (dBm)	26.0~30.0	26.0~30.0	26.0~30.0
2 Txslot	Tolerance (dBm)	23.5~27.5	23.5~27.5	23.5~27.5
3 Txslot	Tolerance (dBm)	22.5~26.5	22.5~26.5	22.5~26.5
4 Txslot	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

GSM 1900 EGPRS(GMSK)				
Channel		512	661	810
1 Txslot	Tolerance (dBm)	26.0~30.0	26.0~30.0	26.0~30.0
2 Txslot	Tolerance (dBm)	23.5~27.5	23.5~27.5	23.5~27.5
3 Txslot	Tolerance (dBm)	22.5~26.5	22.5~26.5	22.5~26.5
4 Txslot	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
GSM 1900 EGPRS(8PSK)				
Channel		512	661	810
1 Txslot	Tolerance (dBm)	21.5~25.5	21.5~25.5	21.5~25.5
2 Txslot	Tolerance (dBm)	21.0~25.0	21.0~25.0	21.0~25.0
3 Txslot	Tolerance (dBm)	21.0~25.0	21.0~25.0	21.0~25.0
4 Txslot	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5

**WCDMA**

WCDMA Band II			
Channel	9262	9400	9538
Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5

HSDPA Band II				
Channel		9262	9400	9538
Sub test 1	Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
Sub test 2	Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
Sub test 3	Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
Sub test 4	Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
HSUPA Band II				
Channel		9262	9400	9538
Sub test 1	Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
Sub test 2	Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
Sub test 3	Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
Sub test 4	Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
Sub test 5	Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
HSPA+ Band II				
Channel		9262	9400	9538
QPSK	Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
16QAM	Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
DC-HSDPA Band II				
Channel		9262	9400	9538
Sub test 1	Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
Sub test 2	Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
Sub test 3	Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
Sub test 4	Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5



WCDMA Band V				
Channel		4132	4183	4233
Tolerance (dBm)		19.5~23.5	19.5~23.5	19.5~23.5
HSDPA Band V				
Channel		4132	4183	4233
Sub test 1	Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
Sub test 2	Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
Sub test 3	Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
Sub test 4	Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
HSUPA Band V				
Channel		4132	4183	4233
Sub test 1	Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
Sub test 2	Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
Sub test 3	Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
Sub test 4	Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
Sub test 5	Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
HSPA+ Band V				
Channel		4132	4183	4233
QPSK	Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
16QAM	Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
DC-HSDPA Band V				
Channel		4132	4183	4233
Sub test 1	Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
Sub test 2	Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
Sub test 3	Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
Sub test 4	Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0

**LTE**

**Band 2**  
**QPSK**

20BW 100%RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	15.0~19.0	15.0~19.0	15.0~19.0
20BW 50%RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	14.5~18.5	14.5~18.5	14.5~18.5
20BW 1RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	14.5~18.5	14.5~18.5	14.5~18.5

**16QAM**

20BW 100%RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	15.0~19.0	15.0~19.0	15.0~19.0
20BW 50%RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	14.5~18.5	14.5~18.5	14.5~18.5
20BW 1RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	14.5~18.5	14.5~18.5	14.5~18.5

**64QAM**

20BW 100%RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	15.0~19.0	15.0~19.0	15.0~19.0
20BW 50%RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	14.5~18.5	14.5~18.5	14.5~18.5
20BW 1RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	14.5~18.5	14.5~18.5	14.5~18.5

**Band 4**  
QPSK

20BW 100%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	14.0~18.0	14.0~18.0	14.0~18.0
20BW 50%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	13.0~17.0	13.0~17.0	13.0~17.0
20BW 1RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	13.0~17.0	13.0~17.0	13.0~17.0

16QAM

20BW 100%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	14.0~18.0	14.0~18.0	14.0~18.0
20BW 50%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	13.0~17.0	13.0~17.0	13.0~17.0
20BW 1RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	13.0~17.0	13.0~17.0	13.0~17.0

64QAM

20BW 100%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	14.0~18.0	14.0~18.0	14.0~18.0
20BW 50%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	13.0~17.0	13.0~17.0	13.0~17.0
20BW 1RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	13.0~17.0	13.0~17.0	13.0~17.0

**Band 5**  
 QPSK

10BW 100%RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
10BW 50%RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
10BW 1RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0

16QAM

10BW 100%RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
10BW 50%RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
10BW 1RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0

64QAM

10BW 100%RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
10BW 50%RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
10BW 1RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0

**Band 7**  
QPSK

20BW 100%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	14.5~18.5	14.5~18.5	14.5~18.5
20BW 50%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	13.5~17.5	13.5~17.5	13.5~17.5
20BW 1RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	13.5~17.5	13.5~17.5	13.5~17.5

16QAM

20BW 100%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	14.5~18.5	14.5~18.5	14.5~18.5
20BW 50%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	13.5~17.5	13.5~17.5	13.5~17.5
20BW 1RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	13.5~17.5	13.5~17.5	13.5~17.5

64QAM

20BW 100%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	14.5~18.5	14.5~18.5	14.5~18.5
20BW 50%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	13.5~17.5	13.5~17.5	13.5~17.5
20BW 1RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	13.5~17.5	13.5~17.5	13.5~17.5

**Band 12**  
QPSK

10BW 100%RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	16.5~20.5	16.5~20.5	16.5~20.5
10BW 50%RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
10BW 1RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5

16QAM

10BW 100%RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	16.5~20.5	16.5~20.5	16.5~20.5
10BW 50%RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
10BW 1RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5

64QAM

10BW 100%RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	16.5~20.5	16.5~20.5	16.5~20.5
10BW 50%RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
10BW 1RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5

**Band 13**  
**QPSK**

10BW 1RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
10BW 50%RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5
10BW 100%RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5

**16QAM**

10BW 1RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
10BW 50%RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5
10BW 100%RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5

**64QAM**

10BW 1RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
10BW 50%RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5
10BW 100%RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5

**Band 66**  
QPSK

20BW 100%RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	14.0~18.0	14.0~18.0	14.0~18.0
20BW 50%RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	13.5~17.5	13.5~17.5	13.5~17.5
20BW 1RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	13.5~17.5	13.5~17.5	13.5~17.5

16QAM

20BW 100%RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	14.0~18.0	14.0~18.0	14.0~18.0
20BW 50%RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	13.5~17.5	13.5~17.5	13.5~17.5
20BW 1RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	13.5~17.5	13.5~17.5	13.5~17.5

64QAM

20BW 100%RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	14.0~18.0	14.0~18.0	14.0~18.0
20BW 50%RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	13.5~17.5	13.5~17.5	13.5~17.5
20BW 1RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	13.5~17.5	13.5~17.5	13.5~17.5



### Down Antenna GSM

GSM 850				
Channel	Channel 128	Channel 189	Channel 251	
Tolerance (dBm)	29.5~33.5	29.5~33.5	29.5~33.5	
GSM 850 GPRS				
Channel		128	189	251
1 Txslot	Tolerance (dBm)	29.5~33.5	29.5~33.5	29.5~33.5
2 Txslot	Tolerance (dBm)	27.0~31.0	27.0~31.0	27.0~31.0
3 Txslot	Tolerance (dBm)	25.5~29.5	25.5~29.5	25.5~29.5
4 Txslot	Tolerance (dBm)	23.5~27.5	23.5~27.5	23.5~27.5
GSM 850 EGPRS(GMSK)				
Channel		128	189	251
1 Txslot	Tolerance (dBm)	29.5~33.5	29.5~33.5	29.5~33.5
2 Txslot	Tolerance (dBm)	27.0~31.0	27.0~31.0	27.0~31.0
3 Txslot	Tolerance (dBm)	25.5~29.5	25.5~29.5	25.5~29.5
4 Txslot	Tolerance (dBm)	23.5~27.5	23.5~27.5	23.5~27.5
GSM 850 EGPRS(8PSK)				
Channel		128	189	251
1 Txslot	Tolerance (dBm)	22.5~26.5	22.5~26.5	22.5~26.5
2 Txslot	Tolerance (dBm)	22.5~26.5	22.5~26.5	22.5~26.5
3 Txslot	Tolerance (dBm)	22.0~26.0	22.0~26.0	22.0~26.0
4 Txslot	Tolerance (dBm)	22.0~26.0	22.0~26.0	22.0~26.0

GSM 1900				
Channel	Channel 512	Channel 661	Channel 810	
Tolerance (dBm)	26.0~30.0	26.0~30.0	26.0~30.0	
GSM 1900 GPRS				
Channel		512	661	810
1 Txslot	Tolerance (dBm)	26.0~30.0	26.0~30.0	26.0~30.0
2 Txslot	Tolerance (dBm)	23.5~27.5	23.5~27.5	23.5~27.5
3 Txslot	Tolerance (dBm)	22.5~26.5	22.5~26.5	22.5~26.5
4 Txslot	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
GSM 1900 EGPRS(GMSK)				
Channel		512	661	810
1 Txslot	Tolerance (dBm)	26.0~30.0	26.0~30.0	26.0~30.0
2 Txslot	Tolerance (dBm)	23.5~27.5	23.5~27.5	23.5~27.5
3 Txslot	Tolerance (dBm)	22.5~26.5	22.5~26.5	22.5~26.5
4 Txslot	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
GSM 1900 EGPRS(8DPSK)				
Channel		512	661	810
1 Txslot	Tolerance (dBm)	21.5~25.5	21.5~25.5	21.5~25.5
2 Txslot	Tolerance (dBm)	21.5~25.5	21.5~25.5	21.5~25.5
3 Txslot	Tolerance (dBm)	21.0~25.0	21.0~25.0	21.0~25.0
4 Txslot	Tolerance (dBm)	21.0~25.0	21.0~25.0	21.0~25.0

**WCDMA**

WCDMA Band II			
Channel	9262	9400	9538
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

HSDPA Band II				
Channel		9262	9400	9538
Sub test 1	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
Sub test 2	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
Sub test 3	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
Sub test 4	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

HSUPA Band II				
Channel		9262	9400	9538
Sub test 1	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
Sub test 2	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
Sub test 3	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
Sub test 4	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
Sub test 5	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

HSPA+ Band II				
Channel		9262	9400	9538
Sub test 1	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
Sub test 2	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

DC-HSDPA Band II				
Channel		9262	9400	9538
Sub test 1	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
Sub test 2	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
Sub test 3	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
Sub test 4	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

WCDMA Band V				
Channel		4132	4183	4233
Tolerance (dBm)		20.5~24.5	20.5~24.5	20.5~24.5
HSDPA Band V				
Channel		4132	4183	4233
Sub test 1	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
Sub test 2	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
Sub test 3	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
Sub test 4	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
HSUPA Band V				
Channel		4132	4183	4233
Sub test 1	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
Sub test 2	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
Sub test 3	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
Sub test 4	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
Sub test 5	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
HSPA+ Band V				
Channel		4132	4183	4233
Sub test 1	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
Sub test 2	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
DC-HSDPA Band V				
Channel		4132	4183	4233
Sub test 1	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
Sub test 2	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
Sub test 3	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
Sub test 4	Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5

**LTE**

**Band 2**

QPSK

20BW 100%RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
20BW 50%RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5
20BW 1RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5

16QAM

20BW 100%RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
20BW 50%RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5
20BW 1RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5

64QAM

20BW 100%RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
20BW 50%RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5
20BW 1RB			
Channel	Channel 19300	Channel 19575	Channel 19850
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5

**Band 4**  
QPSK

20BW 100%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
20BW 50%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5
20BW 1RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5

16QAM

20BW 100%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
20BW 50%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5
20BW 1RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5

64QAM

20BW 100%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
20BW 50%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5
20BW 1RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5

**Band 5**  
 QPSK

10BW 100%RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	21.0~25.0	21.0~25.0	21.0~25.0
10BW 50%RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
10BW 1RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5

16QAM

10BW 100%RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	21.0~25.0	21.0~25.0	21.0~25.0
10BW 50%RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
10BW 1RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5

64QAM

10BW 100%RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	21.0~25.0	21.0~25.0	21.0~25.0
10BW 50%RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
10BW 1RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5

**Band 7**  
QPSK

20BW 100%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
20BW 50%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
20BW 1RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

16QAM

20BW 100%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
20BW 50%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
20BW 1RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

64QAM

20BW 100%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
20BW 50%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
20BW 1RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

**Band 12**  
QPSK

10BW 100%RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
10BW 50%RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5
10BW 1RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5

16QAM

10BW 100%RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
10BW 50%RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5
10BW 1RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5

64QAM

10BW 100%RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
10BW 50%RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5
10BW 1RB			
Channel	Channel 23060	Channel 23095	Channel 23130
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5



**Band 13**  
**QPSK**

10BW 1RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	21.0~25.0	21.0~25.0	21.0~25.0
10BW 50%RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
10BW 100%RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5

**16QAM**

10BW 1RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	21.0~25.0	21.0~25.0	21.0~25.0
10BW 50%RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
10BW 100%RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5

**64QAM**

10BW 1RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	21.0~25.0	21.0~25.0	21.0~25.0
10BW 50%RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5
10BW 100%RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	20.5~24.5	20.5~24.5	20.5~24.5

**Band 66**  
QPSK

20BW 100%RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	21.0~25.0	21.0~25.0	21.0~25.0
20BW 50%RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
20BW 1RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

16QAM

20BW 100%RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	21.0~25.0	21.0~25.0	21.0~25.0
20BW 50%RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
20BW 1RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

64QAM

20BW 100%RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	21.0~25.0	21.0~25.0	21.0~25.0
20BW 50%RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
20BW 1RB			
Channel	Channel 132072	Channel 132322	Channel 132572
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

**Bluetooth**

GFSK			
Channel	0	39	78
Tolerance (dBm)	4.5~8.5	4.5~8.5	4.5~8.5
$\pi/4$ DQPSK			
Channel	0	39	78
Tolerance (dBm)	1.0~5.0	1.0~5.0	1.0~5.0
8DPSK			
Channel	0	39	78
Tolerance (dBm)	1.0~5.0	1.0~5.0	1.0~5.0

**Bluetooth (BLE)**

GFSK(1Mbps)			
Channel	0	19	39
Tolerance (dBm)	2.0~6.0	2.0~6.0	2.0~6.0
GFSK(2Mbps)			
Channel	0	19	39
Tolerance (dBm)	-1.0~3.0	-1.0~3.0	-1.0~3.0

**WLAN 2.4GHz**

**ANT1**

802.11b			
Channel	1	6	11
Tolerance (dBm)	12.5~16.5	12.5~16.5	12.5~16.5
802.11g			
Channel	1	6	11
Tolerance (dBm)	11.0~15.0	11.0~15.0	11.0~15.0
802.11n HT20			
Channel	1	6	11
Tolerance (dBm)	11.0~15.0	11.0~15.0	11.0~15.0
802.11n HT40			
Channel	3	6	9
Tolerance (dBm)	11.0~15.0	11.0~15.0	11.0~15.0

802.11b*			
Channel	1	6	11
Tolerance (dBm)	9.5~13.5	9.5~13.5	9.5~13.5
802.11g*			
Channel	1	6	11
Tolerance (dBm)	9.5~13.5	9.5~13.5	9.5~13.5
802.11n HT20*			
Channel	1	6	11
Tolerance (dBm)	9.5~13.5	9.5~13.5	9.5~13.5
802.11n HT40*			
Channel	3	6	9
Tolerance (dBm)	9.0~13.0	9.0~13.0	9.0~13.0

**\*Note: There is the power reduction of Wi-Fi 2.4GHz is activated when simultaneous transmission for GSM/WCDMA/LTE Antenna and Wi-Fi 2.4GHz Antenna (calling mode-head position)**

**ANT2**

802.11b			
Channel	1	6	11
Tolerance (dBm)	12.5~16.5	12.5~16.5	12.5~16.5
802.11g			
Channel	1	6	11
Tolerance (dBm)	11.0~15.0	11.0~15.0	11.0~15.0
802.11n HT20			
Channel	1	6	11
Tolerance (dBm)	11.0~15.0	11.0~15.0	11.0~15.0
802.11n HT40			
Channel	3	6	9
Tolerance (dBm)	11.0~15.0	11.0~15.0	11.0~15.0

802.11b*			
Channel	1	6	11
Tolerance (dBm)	10.0~14.0	10.0~14.0	10.0~14.0
802.11g*			
Channel	1	6	11
Tolerance (dBm)	10.0~14.0	10.0~14.0	10.0~14.0
802.11n HT20*			
Channel	1	6	11
Tolerance (dBm)	10.0~14.0	10.0~14.0	10.0~14.0
802.11n HT40*			
Channel	3	6	9
Tolerance (dBm)	9.5~13.5	9.5~13.5	9.5~13.5

**\*Note: There is the power reduction of Wi-Fi 2.4GHz is activated when simultaneous transmission for GSM/WCDMA/LTE Antenna and Wi-Fi 2.4GHz Antenna (calling mode-head position)**

**MIMO**

802.11n HT20			
Channel	1	6	11
Tolerance (dBm)	14.0~18.0	14.0~18.0	14.0~18.0
802.11n HT40			
Channel	3	6	9
Tolerance (dBm)	14.0~18.0	14.0~18.0	14.0~18.0

**MIMO**

802.11n HT20*			
Channel	1	6	11
Tolerance (dBm)	12.5~16.5	12.5~16.5	12.5~16.5
802.11n HT40*			
Channel	3	6	9
Tolerance (dBm)	12.5~16.5	12.5~16.5	12.5~16.5

**\*Note: There is the power reduction of Wi-Fi 2.4GHz is activated when simultaneous transmission for GSM/WCDMA/LTE Antenna and Wi-Fi 2.4GHz Antenna (calling mode-head position)**

**WIFI-5GHz (U-NII 1)**

**ANT1**

802.11a	
Tolerance (dBm)	<b>12.0~16.0</b>
802.11n HT20	
Tolerance (dBm)	10.5~14.5
802.11n HT40	
Tolerance (dBm)	10.5~14.5
802.11ac VHT20	
Tolerance (dBm)	7.5~11.5
802.11ac VHT40	
Tolerance (dBm)	8.0~12.0
802.11ac VHT80	
Tolerance (dBm)	8.0~12.0

**ANT2**

802.11a	
Tolerance (dBm)	<b>12.0~16.0</b>
802.11n HT20	
Tolerance (dBm)	11.0~15.0
802.11n HT40	
Tolerance (dBm)	11.0~15.0
802.11ac VHT20	
Tolerance (dBm)	8.0~12.0
802.11ac VHT40	
Tolerance (dBm)	8.5~12.5
802.11ac VHT80	
Tolerance (dBm)	8.0~12.0

**MIMO**

802.11n HT20	
Tolerance (dBm)	14.0~18.0
802.11n HT40	
Tolerance (dBm)	13.5~17.5
802.11ac VHT20	
Tolerance (dBm)	11.0~15.0
802.11ac VHT40	
Tolerance (dBm)	11.5~15.5
802.11ac VHT80	
Tolerance (dBm)	11.0~15.0



**WIFI-5GHz (U-NII 3)**

**ANT1**

802.11a	
Tolerance (dBm)	<b>10.0~14.0</b>
802.11n HT20	
Tolerance (dBm)	9.5~13.5
802.11n HT40	
Tolerance (dBm)	9.5~13.5
802.11ac VHT20	
Tolerance (dBm)	7.5~11.5
802.11ac VHT40	
Tolerance (dBm)	8.5~12.5
802.11ac VHT80	
Tolerance (dBm)	8.0~12.0

**ANT2**

802.11a	
Tolerance (dBm)	<b>10.5~14.5</b>
802.11n HT20	
Tolerance (dBm)	10.0~14.0
802.11n HT40	
Tolerance (dBm)	10.0~14.0
802.11ac VHT20	
Tolerance (dBm)	8.0~12.0
802.11ac VHT40	
Tolerance (dBm)	8.5~12.5
802.11ac VHT80	
Tolerance (dBm)	8.5~12.5

**MIMO**

802.11n HT20	
Tolerance (dBm)	13.0~17.0
802.11n HT40	
Tolerance (dBm)	13.0~17.0
802.11ac VHT20	
Tolerance (dBm)	10.5~14.5
802.11ac VHT40	
Tolerance (dBm)	11.5~15.5
802.11ac VHT80	
Tolerance (dBm)	11.5~15.5

## 6.2 GSM Measurement result

### Up Antenna

#### GSM Measured Power

Mode	GSM850			GSM1900		
Channel	128	189	251	512	661	810
Frequency (MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
Measured Power(dBm)	32.86	32.64	32.43	29.46	29.45	29.18

#### GSM Frame Average Power

Mode	GSM850			GSM1900		
Channel	128	189	251	512	661	810
Frequency (MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
Frame Average Power (dBm)	23.83	23.61	23.40	20.43	20.42	21.12

#### GPRS Measured Power

Mode	GPRS850			GPRS1900		
Channel	128	189	251	512	661	810
Frequency (MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
4Downlink1uplinkPower(dBm)	32.97	32.73	32.52	29.54	29.49	29.23
3Downlink2uplinkPower(dBm)	30.68	30.27	29.98	27.21	27.14	26.84
2Downlink3uplinkPower(dBm)	<b>29.28</b>	<b>29.22</b>	<b>29.16</b>	<b>26.24</b>	<b>25.97</b>	<b>25.29</b>
1Downlink4uplinkPower(dBm)	27.12	26.68	26.43	23.99	23.64	22.86

#### GPRS Frame Average Power

Mode	GPRS850			GPRS1900		
Channel	128	189	251	512	661	810
Frequency (MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
4Downlink1uplinkPower(dBm)	23.94	23.70	23.49	20.51	20.46	20.20
3Downlink2uplinkPower(dBm)	24.66	24.25	23.96	21.19	21.12	20.82
2Downlink3uplinkPower(dBm)	<b>25.02</b>	<b>24.96</b>	<b>24.90</b>	<b>21.98</b>	<b>21.71</b>	<b>21.03</b>
1Downlink4uplinkPower(dBm)	24.11	23.67	23.42	20.98	20.63	19.85

### EGPRS Measured Power

Mode	EGPRS850(GMSK)			EGPRS1900(GMSK)		
	EGPRS850 (8PSK)			EGPRS1900 (8PSK)		
Channel	128	189	251	512	661	810
Frequency(MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
4Downlink1uplinkPower(dBm)	32.97	32.73	32.52	29.54	29.49	29.23
	26.35	26.23	26.14	25.04	24.81	24.53
3Downlink2uplinkPower(dBm)	30.68	30.27	29.98	27.21	27.14	26.84
	26.08	25.96	25.85	24.93	24.61	24.28
2Downlink3uplinkPower(dBm)	29.28	29.02	28.56	26.24	25.97	25.29
	25.86	25.68	25.56	24.70	24.35	23.99
1Downlink4uplinkPower(dBm)	27.12	26.68	26.43	23.99	23.64	22.86
	25.43	25.31	25.18	24.43	24.04	23.66

### EGPRS Frame Average Power

Mode	EGPRS850(GMSK)			EGPRS1900(GMSK)		
	EGPRS850 (8PSK)			EGPRS1900 (8PSK)		
Channel	128	189	251	512	661	810
Frequency(MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
4Downlink1uplinkPower(dBm)	23.94	23.70	23.49	20.51	20.46	20.20
	17.32	17.20	17.11	16.01	15.78	15.50
3Downlink2uplinkPower(dBm)	24.66	24.25	23.96	21.19	21.12	20.82
	20.06	19.94	19.83	18.91	18.59	18.26
2Downlink3uplinkPower(dBm)	25.02	24.76	24.30	21.98	21.71	21.03
	21.60	21.42	21.30	20.44	20.09	19.73
1Downlink4uplinkPower(dBm)	24.11	23.67	23.42	20.98	20.63	19.85
	22.42	22.30	22.17	21.42	21.03	20.65

### Division Factors (for Measured Power and Frame Average Power):

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

1TX-slot (4Downlink1uplink) = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots(3Downlink2uplink) = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots (2Downlink3uplink) = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots (1Downlink4uplink) = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

There is a little difference for modulation type GMSK between GPRS and EDGE (EGPRS), the bit rate is not the same, so we also test the power of GMSK type for EDGE. According to the frame average conducted power as above, the SAR measurements are performed with **3Txslots (2Downlink3uplink)** of GPRS (GMSK).

### Down Antenna

#### GSM Measured Power

Mode	GSM850			GSM1900		
Channel	128	189	251	512	661	810
Frequency (MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
Measured Power(dBm)	33.03	32.86	32.69	29.53	29.54	29.32

#### GSM Frame Average Power

Mode	GSM850			GSM1900		
Channel	128	189	251	512	661	810
Frequency (MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
Frame Average Power (dBm)	24.00	23.83	23.66	20.50	20.51	21.12

#### GPRS Measured Power

Mode	GPRS850			GPRS1900		
Channel	128	189	251	512	661	810
Frequency (MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
4Downlink1uplinkPower(dBm)	33.21	32.96	32.73	29.65	29.62	29.42
3Downlink2uplinkPower(dBm)	30.74	30.36	30.12	27.24	27.21	26.92
2Downlink3uplinkPower(dBm)	<b>29.35</b>	<b>29.14</b>	<b>28.78</b>	<b>26.36</b>	<b>26.04</b>	<b>25.45</b>
1Downlink4uplinkPower(dBm)	27.21	26.85	26.72	24.12	23.83	22.95

#### GPRS Frame Average Power

Mode	GPRS850			GPRS1900		
Channel	128	189	251	512	661	810
Frequency (MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
4Downlink1uplinkPower(dBm)	24.18	23.93	23.70	20.62	20.59	20.39
3Downlink2uplinkPower(dBm)	24.72	24.34	24.10	21.22	21.19	20.90
2Downlink3uplinkPower(dBm)	<b>25.09</b>	<b>24.88</b>	<b>24.52</b>	<b>22.10</b>	<b>21.78</b>	<b>21.19</b>
1Downlink4uplinkPower(dBm)	24.20	23.84	23.71	21.11	20.82	19.94

### EGPRS Measured Power

Mode	EGPRS850(GMSK)			EGPRS1900(GMSK)		
	EGPRS850 (8PSK)			EGPRS1900 (8PSK)		
Channel	128	189	251	512	661	810
Frequency(MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
4Downlink1uplinkPower(dBm)	33.21	32.96	32.73	29.65	29.62	29.42
	26.47	26.32	26.21	25.13	24.86	24.58
3Downlink2uplinkPower(dBm)	30.74	30.36	30.12	27.24	27.21	26.92
	26.15	26.04	25.93	25.05	24.68	24.32
2Downlink3uplinkPower(dBm)	29.35	29.14	28.78	26.36	26.04	25.45
	25.86	25.74	25.62	24.75	24.43	24.12
1Downlink4uplinkPower(dBm)	27.21	26.85	26.72	24.12	23.83	22.95
	25.53	25.47	25.26	24.53	24.13	23.74

### EGPRS Frame Average Power

Mode	EGPRS850(GMSK)			EGPRS1900(GMSK)		
	EGPRS850 (8PSK)			EGPRS1900 (8PSK)		
Channel	128	189	251	512	661	810
Frequency(MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
4Downlink1uplinkPower(dBm)	24.18	23.93	23.70	20.62	20.59	20.39
	17.44	17.29	17.18	16.10	15.83	15.55
3Downlink2uplinkPower(dBm)	24.72	24.34	24.10	21.22	21.19	20.90
	20.13	20.02	19.91	19.03	18.66	18.30
2Downlink3uplinkPower(dBm)	25.09	24.88	24.52	22.10	21.78	21.19
	21.60	21.48	21.36	20.49	20.17	19.86
1Downlink4uplinkPower(dBm)	24.20	23.84	23.71	21.11	20.82	19.94
	22.52	22.46	22.25	21.52	21.12	20.73

### Division Factors (for Measured Power and Frame Average Power):

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

1TX-slot (4Downlink1uplink) = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots(3Downlink2uplink) = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots (2Downlink3uplink) = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots (1Downlink4uplink) = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

There is a little difference for modulation type GMSK between GPRS and EDGE (EGPRS), the bit rate is not the same, so we also test the power of GMSK type for EDGE. According to the frame average conducted power as above, the SAR measurements are performed with **3Txslots (2Downlink3uplink)** of GPRS (GMSK).

### 6.3 WCDMA Measurement result

The following procedures are according to FCC KDB Publication 941225 D01.Release 99  
The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 specification. The DUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7).

Mode	Subtest	Rel99
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	$\beta_c/\beta_d$	8/15

### HSDPA

The following 4 Sub-tests were completed according to Release 5 procedures in section 5.2 of 3GPP TS34.121.

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{hs}^{(1)}$	CM(dB) <sup>(2)</sup>
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15 <sup>(3)</sup>	15/15 <sup>(3)</sup>	64	12/15 <sup>(3)</sup>	24/15	1.0
3	15/15	8/15	64	15/18	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5

Note1:  $\Delta_{ACK}, \Delta_{NACK}$  and  $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$ .

Note2: CM=1 for  $\beta_c/\beta_d = 12/15, \beta_{hs}/\beta_c = 24/15$ .

Note3: For subtest 2 the  $\beta_c/\beta_d$  ratio of 12/15 for the TFC during the measurement period(TF1,TF0) is achieved by setting the signaled gain factors for the reference TFC(TF1,TF1) to  $\beta_c = 11/15$  and  $\beta_d = 15/15$ .

## HSUPA

The following 5 Sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121.

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (S F)	$\beta_c/\beta_d$	$\beta_{hs}^{(1)}$	$\beta_{ec}$	$\beta_{ed}$	$\beta_{ed}$ (S F)	$\beta_{ed}$ (code s)	CM ( <sup>2</sup> dB )	MP R (d B)	AG <sup>(4)</sup> Inde x	E-TF CI
1	11/15 <sup>(3)</sup>	15/15 <sup>(3)</sup>	64	11/15 <sup>(3)</sup>	22/15	209/25	1039/25	4	1	1.0	2.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}:47/15$ $\beta_{ed2}:47/15$	4	2	2.0	2.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 <sup>(4)</sup>	15/15 <sup>(4)</sup>	64	15/15 <sup>(4)</sup>	30/15	24/15	134/15	4	1	1.0	2.0	21	81

Note1:  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$ .

Note2: CM=1 for  $\beta_c/\beta_d = 12/15, \beta_{hs}/\beta_c = 24/15$ . For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note3: For subtest 1 the  $\beta_c/\beta_d$  ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to  $\beta_c = 10/15$  and  $\beta_d = 15/15$ .

Note4: For subtest 5 the  $\beta_c/\beta_d$  ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to  $\beta_c = 14/15$  and  $\beta_d = 15/15$ .

NOTE5: Testing UE using E-DPDCH Physical layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.

NOTE6:  $\beta_{ed}$  can not be set directly; it is set by Absolute Grant Value.



### Up Antenna

#### R99 Measured Results

Mode	Band II		
Channel	9262	9400	9538
Frequency (MHz)	1852.4	1880	1907.6
RB test mode1+64kRMC(dBm)	18.58	18.65	18.71
RB test mode1+12.2kRMC(dBm)	<b>19.44</b>	<b>19.48</b>	<b>19.39</b>
RB test mode1+144kRMC(dBm)	18.62	18.67	18.71
RB test mode1+384kRMC(dBm)	18.64	18.52	18.63

Mode	Band V		
Channel	4132	4183	4233
Frequency(MHz)	826.4	836.4	846.6
RB test mode1+64kRMC(dBm)	22.96	23.01	22.75
RB test mode1+12.2kRMC(dBm)	<b>23.03</b>	<b>23.12</b>	<b>22.96</b>
RB test mode1+144kRMC(dBm)	22.97	23.02	22.75
RB test mode1+384kRMC(dBm)	22.91	23.08	22.74

Mode		Carrier frequency (MHz)	Channel No.	RF Power Output (dBm)
HSDPA	Subtest 1	1852.4	9262	19.36
		1880.0	9400	19.46
		1907.6	9538	19.28
	Subtest 2	1852.4	9262	19.37
		1880.0	9400	19.39
		1907.6	9538	19.26
	Subtest 3	1852.4	9262	19.17
		1880.0	9400	19.46
		1907.6	9538	19.13
	Subtest 4	1852.4	9262	19.24
		1880.0	9400	19.42
		1907.6	9538	19.25
HSUPA	Subtest 1	1852.4	9262	19.34
		1880.0	9400	19.40
		1907.6	9538	19.20
	Subtest 2	1852.4	9262	19.29
		1880.0	9400	19.32
		1907.6	9538	19.19
	Subtest 3	1852.4	9262	19.26
		1880.0	9400	19.35
		1907.6	9538	19.23
	Subtest 4	1852.4	9262	19.25
		1880.0	9400	19.34
		1907.6	9538	19.26
	Subtest 5	1852.4	9262	19.22
		1880.0	9400	19.46
		1907.6	9538	19.28
HSPA+	QPSK	1852.4	9262	19.34

	16QAM	1880.0	9400	19.40
		1907.6	9538	19.20
		1852.4	9262	19.29
		1880.0	9400	19.32
		1907.6	9538	19.19
DC-HSDPA	Subtest 1	1852.4	9262	19.36
		1880.0	9400	19.16
		1907.6	9538	19.18
	Subtest 2	1852.4	9262	19.17
		1880.0	9400	19.19
		1907.6	9538	19.16
	Subtest 3	1852.4	9262	19.17
		1880.0	9400	19.16
		1907.6	9538	19.13
	Subtest 4	1852.4	9262	19.14
		1880.0	9400	19.12
		1907.6	9538	19.15

Mode		Carrier frequency (MHz)	Channel No.	RF Power Output (dBm)
HSDPA	Subtest 1	826.4	4132	22.87
		836.6	4183	22.91
		846.6	4233	22.69
	Subtest 2	826.4	4132	22.57
		836.6	4183	22.89
		846.6	4233	22.80
	Subtest 3	826.4	4132	22.51
		836.6	4183	22.88
		846.6	4233	22.85
	Subtest 4	826.4	4132	22.60
		836.6	4183	22.81
		846.6	4233	22.69
HSUPA	Subtest 1	826.4	4132	22.62
		836.6	4183	22.84
		846.6	4233	22.73
	Subtest 2	826.4	4132	22.57
		836.6	4183	22.65
		846.6	4233	22.79
	Subtest 3	826.4	4132	22.64
		836.6	4183	22.76
		846.6	4233	22.78
	Subtest 4	826.4	4132	22.89
		836.6	4183	22.97
		846.6	4233	22.80
	Subtest 5	826.4	4132	22.59
		836.6	4183	22.87
		846.6	4233	22.72
HSPA+	QPSK	826.4	4132	22.12

	16QAM	836.6	4183	22.14
		846.6	4233	22.13
		826.4	4132	22.17
		836.6	4183	22.15
		846.6	4233	22.19
DC-HSDPA	Subtest 1	826.4	4132	22.17
		836.6	4183	22.21
		846.6	4233	22.19
	Subtest 2	826.4	4132	22.17
		836.6	4183	22.19
		846.6	4233	22.10
	Subtest 3	826.4	4132	22.11
		836.6	4183	22.18
		846.6	4233	22.15
	Subtest 4	826.4	4132	22.10
		836.6	4183	22.11
		846.6	4233	22.19

Note: UMTS SAR was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01.HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.

### Down Antenna

#### R99 Measured Results

Mode	Band II			Band IV		
Channel	9262	9400	9538	1312	1412	1513
Frequency (MHz)	1852.4	1880	1907.6	1712.4	1732.4	1752.6
RB test mode1+64kRMC(dBm)	23.58	23.65	23.71	24.16	24.18	24.11
RB test mode1+12.2kRMC(dBm)	<b>23.68</b>	<b>23.75</b>	<b>23.63</b>	<b>24.26</b>	<b>24.35</b>	<b>24.19</b>
RB test mode1+144kRMC(dBm)	23.42	23.67	23.71	24.24	24.23	24.18
RB test mode1+384kRMC(dBm)	23.24	23.52	23.63	24.13	24.16	24.15

#### WCDMA Band II

Mode		Carrier frequency (MHz)	Channel No.	RF Power Output (dBm)
HSDPA	Subtest 1	1852.4	9262	23.60
		1880.0	9400	23.70
		1907.6	9538	23.52
	Subtest 2	1852.4	9262	23.61
		1880.0	9400	23.63
		1907.6	9538	23.50
	Subtest 3	1852.4	9262	23.41
		1880.0	9400	23.70
		1907.6	9538	23.37
	Subtest 4	1852.4	9262	23.48
		1880.0	9400	23.66
		1907.6	9538	23.49
HSUPA	Subtest 1	1852.4	9262	23.58
		1880.0	9400	23.64
		1907.6	9538	23.44
	Subtest 2	1852.4	9262	23.53
		1880.0	9400	23.56
		1907.6	9538	23.43
	Subtest 3	1852.4	9262	23.50
		1880.0	9400	23.59
		1907.6	9538	23.47
	Subtest 4	1852.4	9262	23.49
		1880.0	9400	23.58
		1907.6	9538	23.50
	Subtest 5	1852.4	9262	23.46
		1880.0	9400	23.70
		1907.6	9538	23.52
HSPA+	QPSK	1852.4	9262	23.08
		1880.0	9400	23.04
		1907.6	9538	23.04
	16QAM	1852.4	9262	23.53
		1880.0	9400	23.06
		1907.6	9538	23.03
DC-HSDPA	Subtest 1	1852.4	9262	23.00
		1880.0	9400	23.00

	Subtest 2	1907.6	9538	23.02	
		1852.4	9262	23.01	
		1880.0	9400	23.03	
	Subtest 3	1907.6	9538	23.00	
		1852.4	9262	23.01	
		1880.0	9400	23.00	
	Subtest 4	1907.6	9538	23.07	
		1852.4	9262	23.08	
		1880.0	9400	23.06	
			1907.6	9538	23.09

Mode		Carrier frequency (MHz)	Channel No.	RF Power Output (dBm)
HSDPA	Subtest 1	826.4	4132	24.10
		836.6	4183	24.14
		846.6	4233	23.92
	Subtest 2	826.4	4132	23.80
		836.6	4183	24.12
		846.6	4233	24.03
	Subtest 3	826.4	4132	23.74
		836.6	4183	24.11
		846.6	4233	24.08
	Subtest 4	826.4	4132	23.83
		836.6	4183	24.04
		846.6	4233	23.92
HSUPA	Subtest 1	826.4	4132	23.85
		836.6	4183	24.07
		846.6	4233	23.96
	Subtest 2	826.4	4132	23.80
		836.6	4183	23.88
		846.6	4233	24.02
	Subtest 3	826.4	4132	23.87
		836.6	4183	23.99
		846.6	4233	24.01
	Subtest 4	826.4	4132	24.12
		836.6	4183	24.20
		846.6	4233	24.03
	Subtest 5	826.4	4132	23.82
		836.6	4183	24.10
		846.6	4233	23.95
HSPA+	QPSK	826.4	4132	23.05
		836.6	4183	23.07
		846.6	4233	23.16
	16QAM	826.4	4132	23.10
		836.6	4183	23.18
		846.6	4233	23.02
DC-HSDPA	Subtest 1	826.4	4132	23.10
		836.6	4183	23.14

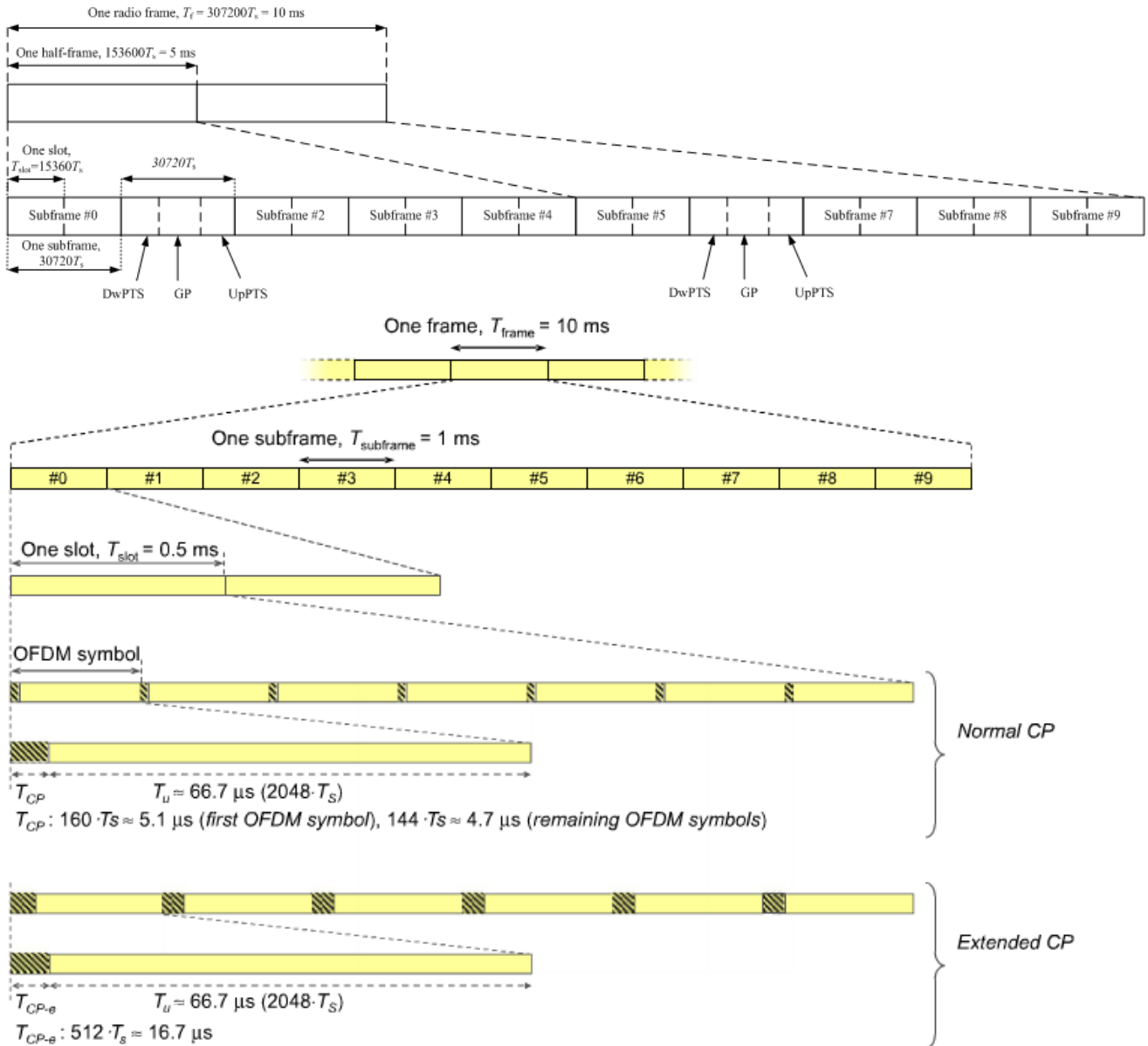
		846.6	4233	23.12
	Subtest 2	826.4	4132	23.10
		836.6	4183	23.12
		846.6	4233	23.03
	Subtest 3	826.4	4132	23.14
		836.6	4183	23.11
		846.6	4233	23.08
	Subtest 4	826.4	4132	23.13
		836.6	4183	23.04
		846.6	4233	23.12

Note: UMTS SAR was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01.HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.

## 6.4 LTE Measurement result

### General description:

### TDD-LTE frame structure



### Uplink-downlink configuration

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

### Special sub-frame configuration

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	$21952 \cdot T_s$			-		
8	$24144 \cdot T_s$			-		

### Special sub-frame with cyclic prefix uplink

Special sub-frame configuration	Duty factor with normal cyclic prefix in uplink	Duty factor with extended cyclic prefix in uplink
Normal cyclic prefix in downlink	0~4	7.13%
	5~9	14.3%
Extended cyclic prefix in downlink	0~3	7.13%
	4~7	14.3%

**So we perform SAR test with maximum duty factor equal to 63.3% by using uplink-downlink configuration 0.**

Note: One sub-frame is  $30720T_s=1\text{ms}$ , when UpPTS(uplink) in special sub-frame with extended cyclic prefix, duty factor =  $5120/30720=0.167$ . There are 5 sub-frames in half frame(3up link), so the final duty factor is  $(30720 \cdot 3 + 5120) / (30720 \cdot 5) = 63.3\%$  which we used to evaluate the SAR compliance (worst case)



**Up Antenna**

**LTE Band 2**

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1850.7	18607	1.4	1	0	18.87
				1	5	18.87
				3	2	17.85
				6	0	17.82
	1880	18900		1	0	18.91
				1	5	18.91
				3	2	17.93
				6	0	17.92
	1909.3	19193		1	0	18.90
				1	5	18.90
				3	2	17.97
				6	0	17.93
16QAM	1850.7	18607	1.4	1	0	18.43
				1	5	18.43
				3	2	16.93
				6	0	16.86
	1880	18900		1	0	18.28
				1	5	18.28
				3	2	16.97
				6	0	16.95
	1909.3	19193		1	0	18.26
				1	5	18.26
				3	2	16.97
				6	0	16.88
64QAM	1850.7	18607	1.4	1	0	18.39
				1	5	18.39
				3	2	16.89
				6	0	16.83
	1880	18900		1	0	18.23
				1	5	18.23
				3	2	16.90
				6	0	16.81
	1909.3	19193		1	0	18.25
				1	5	18.25
				3	2	16.92
				6	0	16.87

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1851.5	18615	3	1	0	18.85
				1	14	18.85
				8	4	17.83
				15	0	17.80
	1880	18900		1	0	18.89
				1	14	18.89
				8	4	17.91
				15	0	17.90
	1908.5	19185		1	0	18.88
				1	14	18.88
				8	4	17.95
				15	0	17.91
16QAM	1851.5	18615	3	1	0	18.41
				1	14	18.41
				8	4	16.91
				15	0	16.84
	1880	18900		1	0	18.26
				1	14	18.26
				8	4	16.95
				15	0	16.93
	1908.5	19185		1	0	18.24
				1	14	18.24
				8	4	16.95
				15	0	16.86
64QAM	1851.5	18615	3	1	0	18.37
				1	14	18.37
				8	4	16.87
				15	0	16.81
	1880	18900		1	0	18.21
				1	14	18.21
				8	4	16.88
				15	0	16.79
	1908.5	19185		1	0	18.23
				1	14	18.23
				8	4	16.90
				15	0	16.85

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1852.5	18625	5	1	0	18.86
				1	24	18.86
				12	6	17.84
				25	0	17.81
	1880	18900		1	0	18.90
				1	24	18.90
				12	6	17.92
				25	0	17.91
	1907.5	19175		1	0	18.89
				1	24	18.89
				12	6	17.96
				25	0	17.92
16QAM	1852.5	18625	5	1	0	18.42
				1	24	18.42
				12	6	16.92
				25	0	16.85
	1880	18900		1	0	18.27
				1	24	18.27
				12	6	16.96
				25	0	16.94
	1907.5	19175		1	0	18.25
				1	24	18.25
				12	6	16.96
				25	0	16.87
64QAM	1852.5	18625	5	1	0	18.38
				1	24	18.38
				12	6	16.88
				25	0	16.82
	1880	18900		1	0	18.22
				1	24	18.22
				12	6	16.89
				25	0	16.80
	1907.5	19175		1	0	18.24
				1	24	18.24
				12	6	16.91
				25	0	16.86

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1855	18650	10	1	0	18.89
				1	49	18.89
				24	12	17.87
				50	0	17.84
	1880	18900		1	0	18.93
				1	49	18.93
				24	12	17.95
				50	0	17.94
	1905	19150		1	0	18.92
				1	49	18.92
				24	12	17.99
				50	0	17.95
16QAM	1855	18650	10	1	0	18.45
				1	49	18.45
				24	12	16.95
				50	0	16.88
	1880	18900		1	0	18.30
				1	49	18.30
				24	12	16.99
				50	0	16.97
	1905	19150		1	0	18.28
				1	49	18.28
				24	12	16.99
				50	0	16.90
64QAM	1855	18650	10	1	0	18.41
				1	49	18.41
				24	12	16.91
				50	0	16.85
	1880	18900		1	0	18.25
				1	49	18.25
				24	12	16.92
				50	0	16.83
	1905	19150		1	0	18.27
				1	49	18.27
				24	12	16.94
				50	0	16.89

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1857.5	18675	15	1	0	18.91
				1	74	18.91
				40	18	17.89
				75	0	17.86
	1880	18900		1	0	18.95
				1	74	18.95
				40	18	17.97
				75	0	17.96
	1902.5	19125		1	0	18.94
				1	74	18.94
				40	18	18.01
				75	0	17.97
16QAM	1857.5	18675	15	1	0	18.47
				1	74	18.47
				40	18	16.97
				75	0	16.90
	1880	18900		1	0	18.32
				1	74	18.32
				40	18	17.01
				75	0	16.99
	1902.5	19125		1	0	18.30
				1	74	18.30
				40	18	17.01
				75	0	16.92
64QAM	1857.5	18675	15	1	0	18.43
				1	74	18.43
				40	18	16.93
				75	0	16.87
	1880	18900		1	0	18.27
				1	74	18.27
				40	18	16.94
				75	0	16.85
	1902.5	19125		1	0	18.29
				1	74	18.29
				40	18	16.96
				75	0	16.91

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1860	18700	20	1	0	<b>18.94</b>
				1	99	<b>18.94</b>
				50	25	17.92
				100	0	17.89
	1880	18900		1	0	<b>18.98</b>
				1	99	<b>18.98</b>
				50	25	18.00
				100	0	17.99
	1900	19100		1	0	<b>18.97</b>
				1	99	<b>18.97</b>
				50	25	18.04
				100	0	18.00
16QAM	1860	18700	20	1	0	18.50
				1	99	18.50
				50	25	17.00
				100	0	16.93
	1880	18900		1	0	18.35
				1	99	18.35
				50	25	17.04
				100	0	17.02
	1900	19100		1	0	18.33
				1	99	18.33
				50	25	17.04
				100	0	16.95
64QAM	1860	18700	20	1	0	18.46
				1	99	18.46
				50	25	16.96
				100	0	16.90
	1880	18900		1	0	18.30
				1	99	18.30
				50	25	16.97
				100	0	16.88
	1900	19100		1	0	18.32
				1	99	18.32
				50	25	16.99
				100	0	16.94

### LTE Band 4

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1710.7	19957	1.4	1	0	17.48
				1	5	17.48
				3	2	16.53
				6	0	16.48
	1732.5	20175		1	0	17.63
				1	5	17.63
				3	2	16.51
				6	0	16.48
	1754.3	20393		1	0	17.55
				1	5	17.55
				3	2	16.53
				6	0	16.50
16QAM	1710.7	19957	1.4	1	0	17.03
				1	5	17.03
				3	2	15.58
				6	0	15.54
	1732.5	20175		1	0	16.97
				1	5	16.97
				3	2	15.54
				6	0	15.50
	1754.3	20393		1	0	17.08
				1	5	17.08
				3	2	15.57
				6	0	15.50
64QAM	1710.7	19957	1.4	1	0	17.01
				1	5	17.01
				3	2	15.58
				6	0	15.50
	1732.5	20175		1	0	16.95
				1	5	16.95
				3	2	15.53
				6	0	15.49
	1754.3	20393		1	0	17.05
				1	5	17.05
				3	2	15.57
				6	0	15.48

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1711.5	19965	3	1	0	17.52
				1	14	17.52
				8	4	16.57
				15	0	16.52
	1732.5	20175		1	0	17.67
				1	14	17.67
				8	4	16.55
				15	0	16.52
	1753.5	20385		1	0	17.59
				1	14	17.59
				8	4	16.57
				15	0	16.54
16QAM	1711.5	19965	3	1	0	17.07
				1	14	17.07
				8	4	15.62
				15	0	15.58
	1732.5	20175		1	0	17.01
				1	14	17.01
				8	4	15.58
				15	0	15.54
	1753.5	20385		1	0	17.12
				1	14	17.12
				8	4	15.61
				15	0	15.54
64QAM	1711.5	19965	3	1	0	17.05
				1	14	17.05
				8	4	15.62
				15	0	15.54
	1732.5	20175		1	0	16.99
				1	14	16.99
				8	4	15.57
				15	0	15.53
	1753.5	20385		1	0	17.09
				1	14	17.09
				8	4	15.61
				15	0	15.52



Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1712.5	19975	5	1	0	17.54
				1	24	17.54
				12	6	16.59
				25	0	16.54
	1732.5	20175		1	0	17.69
				1	24	17.69
				12	6	16.57
				25	0	16.54
	1752.5	20375		1	0	17.61
				1	24	17.61
				12	6	16.59
				25	0	16.56
16QAM	1712.5	19975	5	1	0	17.09
				1	24	17.09
				12	6	15.64
				25	0	15.60
	1732.5	20175		1	0	17.03
				1	24	17.03
				12	6	15.60
				25	0	15.56
	1752.5	20375		1	0	17.14
				1	24	17.14
				12	6	15.63
				25	0	15.56
64QAM	1712.5	19975	5	1	0	17.07
				1	24	17.07
				12	6	15.64
				25	0	15.56
	1732.5	20175		1	0	17.01
				1	24	17.01
				12	6	15.59
				25	0	15.55
	1752.5	20375		1	0	17.11
				1	24	17.11
				12	6	15.63
				25	0	15.54

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1715	20000	10	1	0	17.56
				1	49	17.56
				24	12	16.61
				50	0	16.56
	1732.5	20175		1	0	17.71
				1	49	17.71
				24	12	16.59
				50	0	16.56
	1750	20350		1	0	17.63
				1	49	17.63
				24	12	16.61
				50	0	16.58
16QAM	1715	20000	10	1	0	17.11
				1	49	17.11
				24	12	15.66
				50	0	15.62
	1732.5	20175		1	0	17.05
				1	49	17.05
				24	12	15.62
				50	0	15.58
	1750	20350		1	0	17.16
				1	49	17.16
				24	12	15.65
				50	0	15.58
64QAM	1715	20000	10	1	0	17.09
				1	49	17.09
				24	12	15.66
				50	0	15.58
	1732.5	20175		1	0	17.03
				1	49	17.03
				24	12	15.61
				50	0	15.57
	1750	20350		1	0	17.13
				1	49	17.13
				24	12	15.65
				50	0	15.56

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1717.5	20025	15	1	0	17.58
				1	74	17.58
				40	18	16.63
				75	0	16.58
	1732.5	20175		1	0	17.73
				1	74	17.73
				40	18	16.61
				75	0	16.58
	1747.5	20325		1	0	17.65
				1	74	17.65
				40	18	16.63
				75	0	16.60
16QAM	1717.5	20025	15	1	0	17.13
				1	74	17.13
				40	18	15.68
				75	0	15.64
	1732.5	20175		1	0	17.07
				1	74	17.07
				40	18	15.64
				75	0	15.60
	1747.5	20325		1	0	17.18
				1	74	17.18
				40	18	15.67
				75	0	15.60
64QAM	1717.5	20025	15	1	0	17.11
				1	74	17.11
				40	18	15.68
				75	0	15.60
	1732.5	20175		1	0	17.05
				1	74	17.05
				40	18	15.63
				75	0	15.59
	1747.5	20325		1	0	17.15
				1	74	17.15
				40	18	15.67
				75	0	15.58

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1720	20050	20	1	0	<b>17.81</b>
				1	99	<b>17.81</b>
				50	25	16.66
				100	0	16.61
	1732.5	20175		1	0	<b>17.86</b>
				1	99	<b>17.86</b>
				50	25	16.64
				100	0	16.61
	1745	20300		1	0	<b>17.88</b>
				1	99	<b>17.88</b>
				50	25	16.66
				100	0	16.63
16QAM	1720	20050	20	1	0	17.16
				1	99	17.16
				50	25	15.71
				100	0	15.67
	1732.5	20175		1	0	17.10
				1	99	17.10
				50	25	15.67
				100	0	15.63
	1745	20300		1	0	17.21
				1	99	17.21
				50	25	15.70
				100	0	15.63
64QAM	1720	20050	20	1	0	17.14
				1	99	17.14
				50	25	15.71
				100	0	15.63
	1732.5	20175		1	0	17.08
				1	99	17.08
				50	25	15.66
				100	0	15.62
	1745	20300		1	0	17.18
				1	99	17.18
				50	25	15.70
				100	0	15.61

**LTE Band 5**

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	824.7	20407	1.4	1	0	22.21
				1	5	22.21
				3	2	21.46
				6	0	21.42
	836.5	20525		1	0	22.27
				1	5	22.27
				3	2	21.20
				6	0	21.13
	848.3	20643		1	0	22.17
				1	5	22.17
				3	2	21.51
				6	0	21.23
16QAM	824.7	20407	1.4	1	0	21.80
				1	5	21.80
				3	2	20.56
				6	0	20.47
	836.5	20525		1	0	21.45
				1	5	21.45
				3	2	20.51
				6	0	20.45
	848.3	20643		1	0	21.46
				1	5	21.46
				3	2	20.57
				6	0	20.47
64QAM	824.7	20407	1.4	1	0	21.76
				1	5	21.76
				3	2	20.53
				6	0	20.46
	836.5	20525		1	0	21.60
				1	5	21.60
				3	2	20.56
				6	0	20.41
	848.3	20643		1	0	21.50
				1	5	21.50
				3	2	20.53
				6	0	20.45

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	825.5	20415	3	1	0	22.26
				1	14	22.26
				8	4	21.51
				15	0	21.47
	836.5	20525		1	0	22.32
				1	14	22.32
				8	4	21.25
				15	0	21.18
	847.5	20635		1	0	22.22
				1	14	22.22
				8	4	21.56
				15	0	21.28
16QAM	825.5	20415	3	1	0	21.85
				1	14	21.85
				8	4	20.61
				15	0	20.52
	836.5	20525		1	0	21.50
				1	14	21.50
				8	4	20.56
				15	0	20.50
	847.5	20635		1	0	21.51
				1	14	21.51
				8	4	20.62
				15	0	20.52
64QAM	825.5	20415	3	1	0	21.81
				1	14	21.81
				8	4	20.58
				15	0	20.51
	836.5	20525		1	0	21.65
				1	14	21.65
				8	4	20.61
				15	0	20.46
	847.5	20635		1	0	21.55
				1	14	21.55
				8	4	20.58
				15	0	20.50

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	826.5	20425	5	1	0	22.28
				1	24	22.28
				12	6	21.53
				25	0	21.49
	836.5	20525		1	0	22.34
				1	24	22.34
				12	6	21.27
				25	0	21.20
	846.5	20625		1	0	22.24
				1	24	22.24
				12	6	21.58
				25	0	21.30
16QAM	826.5	20425	5	1	0	21.87
				1	24	21.87
				12	6	20.63
				25	0	20.54
	836.5	20525		1	0	21.52
				1	24	21.52
				12	6	20.58
				25	0	20.52
	846.5	20625		1	0	21.53
				1	24	21.53
				12	6	20.64
				25	0	20.54
64QAM	826.5	20425	5	1	0	21.83
				1	24	21.83
				12	6	20.60
				25	0	20.53
	836.5	20525		1	0	21.67
				1	24	21.67
				12	6	20.63
				25	0	20.48
	846.5	20625		1	0	21.57
				1	24	21.57
				12	6	20.60
				25	0	20.52

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	829	20450	10	1	0	<b>22.33</b>
				1	49	<b>22.33</b>
				24	12	21.58
				50	0	21.54
	836.5	20525		1	0	<b>22.39</b>
				1	49	<b>22.39</b>
				24	12	21.32
				50	0	21.25
	844	20600		1	0	<b>22.29</b>
				1	49	<b>22.29</b>
				24	12	21.63
				50	0	21.35
16QAM	829	20450	10	1	0	21.92
				1	49	21.92
				24	12	20.68
				50	0	20.59
	836.5	20525		1	0	21.57
				1	49	21.57
				24	12	20.63
				50	0	20.57
	844	20600		1	0	21.58
				1	49	21.58
				24	12	20.69
				50	0	20.59
64QAM	829	20450	10	1	0	21.88
				1	49	21.88
				24	12	20.65
				50	0	20.58
	836.5	20525		1	0	21.72
				1	49	21.72
				24	12	20.68
				50	0	20.53
	844	20600		1	0	21.62
				1	49	21.62
				24	12	20.65
				50	0	20.57



### LTE Band 7

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	2502.5	20775	5	1	0	18.15
				1	24	18.15
				12	6	17.37
				25	0	17.31
	2535	21100		1	0	18.02
				1	24	18.02
				12	6	17.09
				25	0	17.16
	2567.5	21425		1	0	17.95
				1	24	17.95
				12	6	17.14
				25	0	17.07
16QAM	2502.5	20775	5	1	0	17.93
				1	24	17.93
				12	6	16.19
				25	0	16.04
	2535	21100		1	0	17.91
				1	24	17.91
				12	6	16.17
				25	0	16.11
	2567.5	21425		1	0	17.68
				1	24	17.68
				12	6	16.17
				25	0	16.08
64QAM	2502.5	20775	5	1	0	17.91
				1	24	17.91
				12	6	16.16
				25	0	16.02
	2535	21100		1	0	17.83
				1	24	17.82
				12	6	16.08
				25	0	15.94
	2567.5	21425		1	0	17.65
				1	24	17.65
				12	6	16.12
				25	0	15.97

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	2505	20800	10	1	0	18.19
				1	49	18.19
				24	12	17.41
				50	0	17.35
	2535	21100		1	0	18.06
				1	49	18.06
				24	12	17.13
				50	0	17.20
	2565	21400		1	0	17.99
				1	49	17.99
				24	12	17.18
				50	0	17.11
16QAM	2505	20800	10	1	0	17.97
				1	49	17.97
				24	12	16.23
				50	0	16.08
	2535	21100		1	0	17.95
				1	49	17.95
				24	12	16.21
				50	0	16.15
	2565	21400		1	0	17.72
				1	49	17.72
				24	12	16.21
				50	0	16.12
64QAM	2505	20800	10	1	0	17.95
				1	49	17.95
				24	12	16.20
				50	0	16.06
	2535	21100		1	0	17.87
				1	49	17.86
				24	12	16.12
				50	0	15.98
	2565	21400		1	0	17.69
				1	49	17.69
				24	12	16.16
				50	0	16.01

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	2507.5	20825	15	1	0	18.23
				1	74	18.23
				40	18	17.45
				75	0	17.39
	2535	21100		1	0	18.10
				1	74	18.10
				40	18	17.17
				75	0	17.24
	2562.5	21375		1	0	18.03
				1	74	18.03
				40	18	17.22
				75	0	17.15
16QAM	2507.5	20825	15	1	0	18.01
				1	74	18.01
				40	18	16.27
				75	0	16.12
	2535	21100		1	0	17.99
				1	74	17.99
				40	18	16.25
				75	0	16.19
	2562.5	21375		1	0	17.76
				1	74	17.76
				40	18	16.25
				75	0	16.16
64QAM	2507.5	20825	15	1	0	17.99
				1	74	17.99
				40	18	16.24
				75	0	16.10
	2535	21100		1	0	17.91
				1	74	17.90
				40	18	16.16
				75	0	16.02
	2562.5	21375		1	0	17.73
				1	74	17.73
				40	18	16.20
				75	0	16.05

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	2510	20850	20	1	0	<b>18.27</b>
				1	99	<b>18.27</b>
				50	25	17.49
				100	0	17.43
	2535	21100		1	0	<b>18.14</b>
				1	99	<b>18.14</b>
				50	25	17.21
				100	0	17.28
	2560	21350		1	0	<b>18.07</b>
				1	99	<b>18.07</b>
				50	25	17.26
				100	0	17.19
16QAM	2510	20850	20	1	0	18.05
				1	99	18.05
				50	25	16.31
				100	0	16.16
	2535	21100		1	0	18.03
				1	99	18.03
				50	25	16.29
				100	0	16.23
	2560	21350		1	0	17.80
				1	99	17.80
				50	25	16.29
				100	0	16.20
64QAM	2510	20850	20	1	0	18.03
				1	99	18.03
				50	25	16.28
				100	0	16.14
	2535	21100		1	0	17.95
				1	99	17.94
				50	25	16.20
				100	0	16.06
	2560	21350		1	0	17.77
				1	99	17.77
				50	25	16.24
				100	0	16.09

**LTE Band 12**

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	699.7	23017	1.4	1	0	19.68
				1	5	19.68
				3	2	19.03
				6	0	18.90
	707.5	23095		1	0	19.91
				1	5	19.91
				3	2	19.08
				6	0	18.97
	715.3	23173		1	0	19.98
				1	5	19.98
				3	2	19.03
				6	0	18.92
16QAM	699.7	23017	1.4	1	0	19.21
				1	5	19.21
				3	2	18.14
				6	0	17.93
	707.5	23095		1	0	19.32
				1	5	19.32
				3	2	18.11
				6	0	18.05
	715.3	23173		1	0	19.44
				1	5	19.44
				3	2	18.14
				6	0	17.88
64QAM	699.7	23017	1.4	1	0	19.03
				1	5	19.03
				3	2	18.12
				6	0	17.97
	707.5	23095		1	0	19.13
				1	5	19.13
				3	2	18.12
				6	0	18.03
	715.3	23173		1	0	19.10
				1	5	19.10
				3	2	18.04
				6	0	17.93

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	700.5	23025	3	1	0	19.74
				1	14	19.74
				8	4	19.09
				15	0	18.96
	707.5	23095		1	0	19.97
				1	14	19.97
				8	4	19.14
				15	0	19.03
	714.5	23165		1	0	20.04
				1	14	20.04
				8	4	19.09
				15	0	18.98
16QAM	700.5	23025	3	1	0	19.27
				1	14	19.27
				8	4	18.20
				15	0	17.99
	707.5	23095		1	0	19.38
				1	14	19.38
				8	4	18.17
				15	0	18.11
	714.5	23165		1	0	19.50
				1	14	19.50
				8	4	18.20
				15	0	17.94
64QAM	700.5	23025	3	1	0	19.09
				1	14	19.09
				8	4	18.18
				15	0	18.03
	707.5	23095		1	0	19.19
				1	14	19.19
				8	4	18.18
				15	0	18.09
	714.5	23165		1	0	19.16
				1	14	19.16
				8	4	18.10
				15	0	17.99

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	701.5	23035	5	1	0	19.79
				1	24	19.79
				12	6	19.14
				25	0	19.01
	707.5	23095		1	0	20.02
				1	24	20.02
				12	6	19.19
				25	0	19.08
	713.5	23155		1	0	20.09
				1	24	20.09
				12	6	19.14
				25	0	19.03
16QAM	701.5	23035	5	1	0	19.32
				1	24	19.32
				12	6	18.25
				25	0	18.04
	707.5	23095		1	0	19.43
				1	24	19.43
				12	6	18.22
				25	0	18.16
	713.5	23155		1	0	19.55
				1	24	19.55
				12	6	18.25
				25	0	17.99
64QAM	701.5	23035	5	1	0	19.14
				1	24	19.14
				12	6	18.23
				25	0	18.08
	707.5	23095		1	0	19.24
				1	24	19.24
				12	6	18.23
				25	0	18.14
	713.5	23155		1	0	19.21
				1	24	19.21
				12	6	18.15
				25	0	18.04

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	704	23060	10	1	0	<b>19.82</b>
				1	49	<b>19.82</b>
				24	12	19.17
				50	0	19.04
	707.5	23095		1	0	<b>20.05</b>
				1	49	<b>20.05</b>
				24	12	19.22
				50	0	19.11
	711	23130		1	0	<b>20.12</b>
				1	49	<b>20.12</b>
				24	12	19.17
				50	0	19.06
16QAM	704	23060	10	1	0	19.35
				1	49	19.35
				24	12	18.28
				50	0	18.07
	707.5	23095		1	0	19.46
				1	49	19.46
				24	12	18.25
				50	0	18.19
	711	23130		1	0	19.58
				1	49	19.58
				24	12	18.28
				50	0	18.02
64QAM	704	23060	10	1	0	19.17
				1	49	19.17
				24	12	18.26
				50	0	18.11
	707.5	23095		1	0	19.27
				1	49	19.27
				24	12	18.26
				50	0	18.17
	711	23130		1	0	19.24
				1	49	19.24
				24	12	18.18
				50	0	18.07



### LTE Band 13

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	779.5	23205	5	1	0	23.52
				1	24	23.52
				12	6	23.09
				25	0	23.08
	782	23230		1	0	23.88
				1	24	23.88
				12	6	23.18
				25	0	23.14
	784.5	23255		1	0	23.95
				1	24	23.95
				12	6	23.14
				25	0	22.96
16QAM	779.5	23205	5	1	0	22.88
				1	24	22.88
				12	6	22.18
				25	0	22.10
	782	23230		1	0	22.93
				1	24	22.93
				12	6	22.13
				25	0	22.04
	784.5	23255		1	0	22.92
				1	24	22.92
				12	6	22.13
				25	0	21.99
64QAM	779.5	23205	5	1	0	22.90
				1	24	22.90
				12	6	22.18
				25	0	22.12
	782	23230		1	0	22.92
				1	24	22.92
				12	6	22.10
				25	0	22.02
	784.5	23255		1	0	22.91
				1	24	22.91
				12	6	22.10
				25	0	21.97

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	782	23230	10	1	0	<b>23.93</b>
				1	49	<b>23.93</b>
				24	12	23.23
				50	0	23.19
16QAM	782	23230	10	1	0	22.98
				1	49	22.98
				24	12	22.18
				50	0	22.09
64QAM	782	23230	10	1	0	22.97
				1	49	22.97
				24	12	22.15
				50	0	22.07

**LTE Band 66**

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1710.7	131979	1.4	1	0	17.81
				1	5	17.81
				3	2	16.93
				6	0	16.87
	1745	132322		1	0	17.87
				1	5	17.87
				3	2	16.98
				6	0	16.95
	1779.3	132665		1	0	17.84
				1	5	17.84
				3	2	16.94
				6	0	16.91
16QAM	1710.7	131979	1.4	1	0	17.07
				1	5	17.07
				3	2	15.96
				6	0	15.91
	1745	132322		1	0	16.96
				1	5	16.96
				3	2	15.95
				6	0	15.94
	1779.3	132665		1	0	16.95
				1	5	16.95
				3	2	16.01
				6	0	15.93
64QAM	1710.7	131979	1.4	1	0	16.95
				1	5	16.95
				3	2	15.92
				6	0	15.87
	1745	132322		1	0	16.94
				1	5	16.94
				3	2	15.91
				6	0	15.87
	1779.3	132665		1	0	16.94
				1	5	16.94
				3	2	15.98
				6	0	15.87

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1711.5	131987	3	1	0	17.85
				1	14	17.85
				8	4	16.97
				15	0	16.91
	1745	132322		1	0	17.91
				1	14	17.91
				8	4	17.02
				15	0	16.99
	1778.5	132657		1	0	17.88
				1	14	17.88
				8	4	16.98
				15	0	16.95
16QAM	1711.5	131987	3	1	0	17.11
				1	14	17.11
				8	4	16.00
				15	0	15.95
	1745	132322		1	0	17.00
				1	14	17.00
				8	4	15.99
				15	0	15.98
	1778.5	132657		1	0	16.99
				1	14	16.99
				8	4	16.05
				15	0	15.97
64QAM	1711.5	131987	3	1	0	16.99
				1	14	16.99
				8	4	15.96
				15	0	15.91
	1745	132322		1	0	16.98
				1	14	16.98
				8	4	15.95
				15	0	15.91
	1778.5	132657		1	0	16.98
				1	14	16.98
				8	4	16.02
				15	0	15.91

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1712.5	131997	5	1	0	17.87
				1	24	17.87
				12	6	16.99
				25	0	16.93
	1745	132322		1	0	17.93
				1	24	17.93
				12	6	17.04
				25	0	17.01
	1777.5	132647		1	0	17.90
				1	24	17.90
				12	6	17.00
				25	0	16.97
16QAM	1712.5	131997	5	1	0	17.13
				1	24	17.13
				12	6	16.02
				25	0	15.97
	1745	132322		1	0	17.02
				1	24	17.02
				12	6	16.01
				25	0	16.00
	1777.5	132647		1	0	17.01
				1	24	17.01
				12	6	16.07
				25	0	15.99
64QAM	1712.5	131997	5	1	0	17.01
				1	24	17.01
				12	6	15.98
				25	0	15.93
	1745	132322		1	0	17.00
				1	24	17.00
				12	6	15.97
				25	0	15.93
	1777.5	132647		1	0	17.00
				1	24	17.00
				12	6	16.04
				25	0	15.93

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1715	132022	10	1	0	17.89
				1	49	17.89
				24	12	17.01
				50	0	16.95
	1745	132322		1	0	17.95
				1	49	17.95
				24	12	17.06
				50	0	17.03
	1775	132622		1	0	17.92
				1	49	17.92
				24	12	17.02
				50	0	16.99
16QAM	1715	132022	10	1	0	17.15
				1	49	17.15
				24	12	16.04
				50	0	15.99
	1745	132322		1	0	17.04
				1	49	17.04
				24	12	16.03
				50	0	16.02
	1775	132622		1	0	17.03
				1	49	17.03
				24	12	16.09
				50	0	16.01
64QAM	1715	132022	10	1	0	17.03
				1	49	17.03
				24	12	16.00
				50	0	15.95
	1745	132322		1	0	17.02
				1	49	17.02
				24	12	15.99
				50	0	15.95
	1775	132622		1	0	17.02
				1	49	17.02
				24	12	16.06
				50	0	15.95

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1717.5	132047	15	1	0	17.92
				1	74	17.92
				40	18	17.04
				75	0	16.98
	1745	132322		1	0	17.98
				1	74	17.98
				40	18	17.09
				75	0	17.06
	1772.5	132597		1	0	17.95
				1	74	17.95
				40	18	17.05
				75	0	17.02
16QAM	1717.5	132047	15	1	0	17.18
				1	74	17.18
				40	18	16.07
				75	0	16.02
	1745	132322		1	0	17.07
				1	74	17.07
				40	18	16.06
				75	0	16.05
	1772.5	132597		1	0	17.06
				1	74	17.06
				40	18	16.12
				75	0	16.04
64QAM	1717.5	132047	15	1	0	17.06
				1	74	17.06
				40	18	16.03
				75	0	15.98
	1745	132322		1	0	17.05
				1	74	17.05
				40	18	16.02
				75	0	15.98
	1772.5	132597		1	0	17.05
				1	74	17.05
				40	18	16.09
				75	0	15.98

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1720	132072	20	1	0	<b>17.94</b>
				1	99	<b>17.94</b>
				50	25	17.06
				100	0	17.00
	1745	132322		1	0	<b>17.99</b>
				1	99	<b>17.99</b>
				50	25	17.11
				100	0	17.08
	1770	132572		1	0	<b>17.97</b>
				1	99	<b>17.97</b>
				50	25	17.07
				100	0	17.04
16QAM	1720	132072	20	1	0	17.20
				1	99	17.20
				50	25	16.09
				100	0	16.04
	1745	132322		1	0	17.09
				1	99	17.09
				50	25	16.08
				100	0	16.07
	1770	132572		1	0	17.08
				1	99	17.08
				50	25	16.14
				100	0	16.06
64QAM	1720	132072	20	1	0	17.08
				1	99	17.08
				50	25	16.05
				100	0	16.00
	1745	132322		1	0	17.07
				1	99	17.07
				50	25	16.04
				100	0	16.00
	1770	132572		1	0	17.07
				1	99	17.07
				50	25	16.11
				100	0	16.00



**Down Antenna**

**LTE BAND2**

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1850.7	18607	1.4	1	0	24.09
				1	5	24.09
				3	2	23.07
				6	0	23.04
	1880	18900		1	0	24.13
				1	5	24.13
				3	2	23.15
				6	0	23.14
	1909.3	19193		1	0	24.12
				1	5	24.12
				3	2	23.19
				6	0	23.15
16QAM	1850.7	18607	1.4	1	0	23.65
				1	5	23.65
				3	2	22.15
				6	0	22.08
	1880	18900		1	0	23.50
				1	5	23.50
				3	2	22.19
				6	0	22.17
	1909.3	19193		1	0	23.48
				1	5	23.48
				3	2	22.19
				6	0	22.10
64QAM	1850.7	18607	1.4	1	0	23.61
				1	5	23.61
				3	2	22.11
				6	0	22.05
	1880	18900		1	0	23.45
				1	5	23.45
				3	2	22.12
				6	0	22.03
	1909.3	19193		1	0	23.47
				1	5	23.47
				3	2	22.14
				6	0	22.09

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1851.5	18615	3	1	0	24.03
				1	14	24.03
				8	4	23.01
				15	0	22.98
	1880	18900		1	0	24.07
				1	14	24.07
				8	4	23.09
				15	0	23.08
	1908.5	19185		1	0	24.06
				1	14	24.06
				8	4	23.13
				15	0	23.09
16QAM	1851.5	18615	3	1	0	23.59
				1	14	23.59
				8	4	22.09
				15	0	22.02
	1880	18900		1	0	23.44
				1	14	23.44
				8	4	22.13
				15	0	22.11
	1908.5	19185		1	0	23.42
				1	14	23.42
				8	4	22.13
				15	0	22.04
64QAM	1851.5	18615	3	1	0	23.55
				1	14	23.55
				8	4	22.05
				15	0	21.99
	1880	18900		1	0	23.39
				1	14	23.39
				8	4	22.06
				15	0	21.97
	1908.5	19185		1	0	23.41
				1	14	23.41
				8	4	22.08
				15	0	22.03

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1852.5	18625	5	1	0	24.01
				1	24	24.01
				12	6	22.99
				25	0	22.96
	1880	18900		1	0	24.05
				1	24	24.05
				12	6	23.07
				25	0	23.06
	1907.5	19175		1	0	24.04
				1	24	24.04
				12	6	23.11
				25	0	23.07
16QAM	1852.5	18625	5	1	0	23.57
				1	24	23.57
				12	6	22.07
				25	0	22.00
	1880	18900		1	0	23.42
				1	24	23.42
				12	6	22.11
				25	0	22.09
	1907.5	19175		1	0	23.40
				1	24	23.40
				12	6	22.11
				25	0	22.02
64QAM	1852.5	18625	5	1	0	23.53
				1	24	23.53
				12	6	22.03
				25	0	21.97
	1880	18900		1	0	23.37
				1	24	23.37
				12	6	22.04
				25	0	21.95
	1907.5	19175		1	0	23.39
				1	24	23.39
				12	6	22.06
				25	0	22.01

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1855	18650	10	1	0	24.04
				1	49	24.04
				24	12	23.02
				50	0	22.99
	1880	18900		1	0	24.08
				1	49	24.08
				24	12	23.10
				50	0	23.09
	1905	19150		1	0	24.07
				1	49	24.07
				24	12	23.14
				50	0	23.10
16QAM	1855	18650	10	1	0	23.60
				1	49	23.60
				24	12	22.10
				50	0	22.03
	1880	18900		1	0	23.45
				1	49	23.45
				24	12	22.14
				50	0	22.12
	1905	19150		1	0	23.43
				1	49	23.43
				24	12	22.14
				50	0	22.05
64QAM	1855	18650	10	1	0	23.56
				1	49	23.56
				24	12	22.06
				50	0	22.00
	1880	18900		1	0	23.40
				1	49	23.40
				24	12	22.07
				50	0	21.98
	1905	19150		1	0	23.42
				1	49	23.42
				24	12	22.09
				50	0	22.04

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1857.5	18675	15	1	0	24.07
				1	74	24.07
				40	18	23.05
				75	0	23.02
	1880	18900		1	0	24.11
				1	74	24.11
				40	18	23.13
				75	0	23.12
	1902.5	19125		1	0	24.10
				1	74	24.10
				40	18	23.17
				75	0	23.13
16QAM	1857.5	18675	15	1	0	23.63
				1	74	23.63
				40	18	22.13
				75	0	22.06
	1880	18900		1	0	23.48
				1	74	23.48
				40	18	22.17
				75	0	22.15
	1902.5	19125		1	0	23.46
				1	74	23.46
				40	18	22.17
				75	0	22.08
64QAM	1857.5	18675	15	1	0	23.59
				1	74	23.59
				40	18	22.09
				75	0	22.03
	1880	18900		1	0	23.43
				1	74	23.43
				40	18	22.10
				75	0	22.01
	1902.5	19125		1	0	23.45
				1	74	23.45
				40	18	22.12
				75	0	22.07

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1860	18700	20	1	0	<b>24.12</b>
				1	99	<b>24.12</b>
				50	25	23.10
				100	0	23.07
	1880	18900		1	0	<b>24.16</b>
				1	99	<b>24.16</b>
				50	25	23.18
				100	0	23.17
	1900	19100		1	0	<b>24.15</b>
				1	99	<b>24.15</b>
				50	25	23.22
				100	0	23.18
16QAM	1860	18700	20	1	0	23.68
				1	99	23.68
				50	25	22.18
				100	0	22.11
	1880	18900		1	0	23.53
				1	99	23.53
				50	25	22.22
				100	0	22.20
	1900	19100		1	0	23.51
				1	99	23.51
				50	25	22.22
				100	0	22.13
64QAM	1860	18700	20	1	0	23.64
				1	99	23.64
				50	25	22.14
				100	0	22.08
	1880	18900		1	0	23.48
				1	99	23.48
				50	25	22.15
				100	0	22.06
	1900	19100		1	0	23.50
				1	99	23.50
				50	25	22.17
				100	0	22.12

**LTE BAND4**

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1710.7	19957	1.4	1	0	23.97
				1	5	23.97
				3	2	23.02
				6	0	22.97
	1732.5	20175		1	0	24.12
				1	5	24.12
				3	2	23.00
				6	0	22.97
	1754.3	20393		1	0	24.04
				1	5	24.04
				3	2	23.02
				6	0	22.99
16QAM	1710.7	19957	1.4	1	0	23.52
				1	5	23.52
				3	2	22.07
				6	0	22.03
	1732.5	20175		1	0	23.46
				1	5	23.46
				3	2	22.03
				6	0	21.99
	1754.3	20393		1	0	23.57
				1	5	23.57
				3	2	22.06
				6	0	21.99
64QAM	1710.7	19957	1.4	1	0	23.50
				1	5	23.50
				3	2	22.07
				6	0	21.99
	1732.5	20175		1	0	23.44
				1	5	23.44
				3	2	22.02
				6	0	21.98
	1754.3	20393		1	0	23.54
				1	5	23.54
				3	2	22.06
				6	0	21.97

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1711.5	19965	3	1	0	23.99
				1	14	23.99
				8	4	23.04
				15	0	22.99
	1732.5	20175		1	0	24.14
				1	14	24.14
				8	4	23.02
				15	0	22.99
	1753.5	20385		1	0	24.06
				1	14	24.06
				8	4	23.04
				15	0	23.01
16QAM	1711.5	19965	3	1	0	23.54
				1	14	23.54
				8	4	22.09
				15	0	22.05
	1732.5	20175		1	0	23.48
				1	14	23.48
				8	4	22.05
				15	0	22.01
	1753.5	20385		1	0	23.59
				1	14	23.59
				8	4	22.08
				15	0	22.01
64QAM	1711.5	19965	3	1	0	23.52
				1	14	23.52
				8	4	22.09
				15	0	22.01
	1732.5	20175		1	0	23.46
				1	14	23.46
				8	4	22.04
				15	0	22.00
	1753.5	20385		1	0	23.56
				1	14	23.56
				8	4	22.08
				15	0	21.99



Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1712.5	19975	5	1	0	24.04
				1	24	24.04
				12	6	23.09
				25	0	23.04
	1732.5	20175		1	0	24.19
				1	24	24.19
				12	6	23.07
				25	0	23.04
	1752.5	20375		1	0	24.11
				1	24	24.11
				12	6	23.09
				25	0	23.06
16QAM	1712.5	19975	5	1	0	23.59
				1	24	23.59
				12	6	22.14
				25	0	22.10
	1732.5	20175		1	0	23.53
				1	24	23.53
				12	6	22.10
				25	0	22.06
	1752.5	20375		1	0	23.64
				1	24	23.64
				12	6	22.13
				25	0	22.06
64QAM	1712.5	19975	5	1	0	23.57
				1	24	23.57
				12	6	22.14
				25	0	22.06
	1732.5	20175		1	0	23.51
				1	24	23.51
				12	6	22.09
				25	0	22.05
	1752.5	20375		1	0	23.61
				1	24	23.61
				12	6	22.13
				25	0	22.04

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1715	20000	10	1	0	24.05
				1	49	24.05
				24	12	23.10
				50	0	23.05
	1732.5	20175		1	0	24.20
				1	49	24.20
				24	12	23.08
				50	0	23.05
	1750	20350		1	0	24.12
				1	49	24.12
				24	12	23.10
				50	0	23.07
16QAM	1715	20000	10	1	0	23.60
				1	49	23.60
				24	12	22.15
				50	0	22.11
	1732.5	20175		1	0	23.54
				1	49	23.54
				24	12	22.11
				50	0	22.07
	1750	20350		1	0	23.65
				1	49	23.65
				24	12	22.14
				50	0	22.07
64QAM	1715	20000	10	1	0	23.58
				1	49	23.58
				24	12	22.15
				50	0	22.07
	1732.5	20175		1	0	23.52
				1	49	23.52
				24	12	22.10
				50	0	22.06
	1750	20350		1	0	23.62
				1	49	23.62
				24	12	22.14
				50	0	22.05

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1717.5	20025	15	1	0	24.08
				1	74	24.08
				40	18	23.13
				75	0	23.08
	1732.5	20175		1	0	24.23
				1	74	24.23
				40	18	23.11
				75	0	23.08
	1747.5	20325		1	0	24.15
				1	74	24.15
				40	18	23.13
				75	0	23.10
16QAM	1717.5	20025	15	1	0	23.63
				1	74	23.63
				40	18	22.18
				75	0	22.14
	1732.5	20175		1	0	23.57
				1	74	23.57
				40	18	22.14
				75	0	22.10
	1747.5	20325		1	0	23.68
				1	74	23.68
				40	18	22.17
				75	0	22.10
64QAM	1717.5	20025	15	1	0	23.61
				1	74	23.61
				40	18	22.18
				75	0	22.10
	1732.5	20175		1	0	23.55
				1	74	23.55
				40	18	22.13
				75	0	22.09
	1747.5	20325		1	0	23.65
				1	74	23.65
				40	18	22.17
				75	0	22.08

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1720	20050	20	1	0	<b>24.11</b>
				1	99	<b>24.11</b>
				50	25	23.16
				100	0	23.11
	1732.5	20175		1	0	<b>24.26</b>
				1	99	<b>24.26</b>
				50	25	23.14
				100	0	23.11
	1745	20300		1	0	<b>24.18</b>
				1	99	<b>24.18</b>
				50	25	23.16
				100	0	23.13
16QAM	1720	20050	20	1	0	23.66
				1	99	23.66
				50	25	22.21
				100	0	22.17
	1732.5	20175		1	0	23.60
				1	99	23.60
				50	25	22.17
				100	0	22.13
	1745	20300		1	0	23.71
				1	99	23.71
				50	25	22.20
				100	0	22.13
64QAM	1720	20050	20	1	0	23.64
				1	99	23.64
				50	25	22.21
				100	0	22.13
	1732.5	20175		1	0	23.58
				1	99	23.58
				50	25	22.16
				100	0	22.12
	1745	20300		1	0	23.68
				1	99	23.68
				50	25	22.20
				100	0	22.11

**LTE BAND5**

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	824.7	20407	1.4	1	0	24.73
				1	5	24.73
				3	2	23.98
				6	0	23.94
	836.5	20525		1	0	24.79
				1	5	24.79
				3	2	23.72
				6	0	23.65
	848.3	20643		1	0	24.69
				1	5	24.69
				3	2	24.03
				6	0	23.75
16QAM	824.7	20407	1.4	1	0	24.32
				1	5	24.32
				3	2	23.08
				6	0	22.99
	836.5	20525		1	0	23.97
				1	5	23.97
				3	2	23.03
				6	0	22.97
	848.3	20643		1	0	23.98
				1	5	23.98
				3	2	23.09
				6	0	22.99
64QAM	824.7	20407	1.4	1	0	24.28
				1	5	24.28
				3	2	23.05
				6	0	22.98
	836.5	20525		1	0	24.12
				1	5	24.12
				3	2	23.08
				6	0	22.93
	848.3	20643		1	0	24.02
				1	5	24.02
				3	2	23.05
				6	0	22.97

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	825.5	20415	3	1	0	24.69
				1	14	24.69
				8	4	23.94
				15	0	23.90
	836.5	20525		1	0	24.75
				1	14	24.75
				8	4	23.68
				15	0	23.61
	847.5	20635		1	0	24.65
				1	14	24.65
				8	4	23.99
				15	0	23.71
16QAM	825.5	20415	3	1	0	24.28
				1	14	24.28
				8	4	23.04
				15	0	22.95
	836.5	20525		1	0	23.93
				1	14	23.93
				8	4	22.99
				15	0	22.93
	847.5	20635		1	0	23.94
				1	14	23.94
				8	4	23.05
				15	0	22.95
64QAM	825.5	20415	3	1	0	24.24
				1	14	24.24
				8	4	23.01
				15	0	22.94
	836.5	20525		1	0	24.08
				1	14	24.08
				8	4	23.04
				15	0	22.89
	847.5	20635		1	0	23.98
				1	14	23.98
				8	4	23.01
				15	0	22.93

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	826.5	20425	5	1	0	24.76
				1	24	24.76
				12	6	24.01
				25	0	23.97
	836.5	20525		1	0	24.82
				1	24	24.82
				12	6	23.75
				25	0	23.68
	846.5	20625		1	0	24.72
				1	24	24.72
				12	6	24.06
				25	0	23.78
16QAM	826.5	20425	5	1	0	24.35
				1	24	24.35
				12	6	23.11
				25	0	23.02
	836.5	20525		1	0	24.00
				1	24	24.00
				12	6	23.06
				25	0	23.00
	846.5	20625		1	0	24.01
				1	24	24.01
				12	6	23.12
				25	0	23.02
64QAM	826.5	20425	5	1	0	24.31
				1	24	24.31
				12	6	23.08
				25	0	23.01
	836.5	20525		1	0	24.15
				1	24	24.15
				12	6	23.11
				25	0	22.96
	846.5	20625		1	0	24.05
				1	24	24.05
				12	6	23.08
				25	0	23.00

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	829	20450	10	1	0	<b>24.82</b>
				1	49	<b>24.82</b>
				24	12	24.07
				50	0	24.03
	836.5	20525		1	0	<b>24.88</b>
				1	49	<b>24.88</b>
				24	12	23.81
				50	0	23.74
	844	20600		1	0	<b>24.78</b>
				1	49	<b>24.78</b>
				24	12	24.12
				50	0	23.84
16QAM	829	20450	10	1	0	24.41
				1	49	24.41
				24	12	23.17
				50	0	23.08
	836.5	20525		1	0	24.06
				1	49	24.06
				24	12	23.12
				50	0	23.06
	844	20600		1	0	24.07
				1	49	24.07
				24	12	23.18
				50	0	23.08
64QAM	829	20450	10	1	0	24.37
				1	49	24.37
				24	12	23.14
				50	0	23.07
	836.5	20525		1	0	24.21
				1	49	24.21
				24	12	23.17
				50	0	23.02
	844	20600		1	0	24.11
				1	49	24.11
				24	12	23.14
				50	0	23.06



### LTE BAND7

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	2502.5	20775	5	1	0	24.27
				1	24	24.27
				12	6	23.49
				25	0	23.43
	2535	21100		1	0	24.14
				1	24	24.14
				12	6	23.21
				25	0	23.28
	2567.5	21425		1	0	24.07
				1	24	24.07
				12	6	23.26
				25	0	23.19
16QAM	2502.5	20775	5	1	0	24.05
				1	24	24.05
				12	6	22.31
				25	0	22.16
	2535	21100		1	0	24.03
				1	24	24.03
				12	6	22.29
				25	0	22.23
	2567.5	21425		1	0	23.80
				1	24	23.80
				12	6	22.29
				25	0	22.20
64QAM	2502.5	20775	5	1	0	24.03
				1	24	24.03
				12	6	22.28
				25	0	22.14
	2535	21100		1	0	23.95
				1	24	23.94
				12	6	22.20
				25	0	22.06
	2567.5	21425		1	0	23.77
				1	24	23.77
				12	6	22.24
				25	0	22.09

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	2505	20800	10	1	0	24.34
				1	49	24.34
				24	12	23.56
				50	0	23.50
	2535	21100		1	0	24.21
				1	49	24.21
				24	12	23.28
				50	0	23.35
	2565	21400		1	0	24.14
				1	49	24.14
				24	12	23.33
				50	0	23.26
16QAM	2505	20800	10	1	0	24.12
				1	49	24.12
				24	12	22.38
				50	0	22.23
	2535	21100		1	0	24.10
				1	49	24.10
				24	12	22.36
				50	0	22.30
	2565	21400		1	0	23.87
				1	49	23.87
				24	12	22.36
				50	0	22.27
64QAM	2505	20800	10	1	0	24.10
				1	49	24.10
				24	12	22.35
				50	0	22.21
	2535	21100		1	0	24.02
				1	49	24.01
				24	12	22.27
				50	0	22.13
	2565	21400		1	0	23.84
				1	49	23.84
				24	12	22.31
				50	0	22.16

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	2507.5	20825	15	1	0	24.37
				1	74	24.37
				40	18	23.59
				75	0	23.53
	2535	21100		1	0	24.24
				1	74	24.24
				40	18	23.31
				75	0	23.38
	2562.5	21375		1	0	24.17
				1	74	24.17
				40	18	23.36
				75	0	23.29
16QAM	2507.5	20825	15	1	0	24.15
				1	74	24.15
				40	18	22.41
				75	0	22.26
	2535	21100		1	0	24.13
				1	74	24.13
				40	18	22.39
				75	0	22.33
	2562.5	21375		1	0	23.90
				1	74	23.90
				40	18	22.39
				75	0	22.30
64QAM	2507.5	20825	15	1	0	24.13
				1	74	24.13
				40	18	22.38
				75	0	22.24
	2535	21100		1	0	24.05
				1	74	24.04
				40	18	22.30
				75	0	22.16
	2562.5	21375		1	0	23.87
				1	74	23.87
				40	18	22.34
				75	0	22.19

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	2510	20850	20	1	0	<b>24.45</b>
				1	99	<b>24.45</b>
				50	25	23.67
				100	0	23.61
	2535	21100		1	0	<b>24.32</b>
				1	99	<b>24.32</b>
				50	25	23.39
				100	0	23.46
	2560	21350		1	0	<b>24.25</b>
				1	99	<b>24.25</b>
				50	25	23.44
				100	0	23.37
16QAM	2510	20850	20	1	0	24.23
				1	99	24.23
				50	25	22.49
				100	0	22.34
	2535	21100		1	0	24.21
				1	99	24.21
				50	25	22.47
				100	0	22.41
	2560	21350		1	0	23.98
				1	99	23.98
				50	25	22.47
				100	0	22.38
64QAM	2510	20850	20	1	0	24.21
				1	99	24.21
				50	25	22.46
				100	0	22.32
	2535	21100		1	0	24.13
				1	99	24.12
				50	25	22.38
				100	0	22.24
	2560	21350		1	0	23.95
				1	99	23.95
				50	25	22.42
				100	0	22.27

### LTE BAND12

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	699.7	23017	1.4	1	0	23.76
				1	5	23.76
				3	2	23.11
				6	0	22.98
	707.5	23095		1	0	23.99
				1	5	23.99
				3	2	23.16
				6	0	23.05
	715.3	23173		1	0	24.06
				1	5	24.06
				3	2	23.11
				6	0	23.00
16QAM	699.7	23017	1.4	1	0	23.29
				1	5	23.29
				3	2	22.22
				6	0	22.01
	707.5	23095		1	0	23.40
				1	5	23.40
				3	2	22.19
				6	0	22.13
	715.3	23173		1	0	23.52
				1	5	23.52
				3	2	22.22
				6	0	21.96
64QAM	699.7	23017	1.4	1	0	23.11
				1	5	23.11
				3	2	22.20
				6	0	22.05
	707.5	23095		1	0	23.21
				1	5	23.21
				3	2	22.20
				6	0	22.11
	715.3	23173		1	0	23.18
				1	5	23.18
				3	2	22.12
				6	0	22.01

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	700.5	23025	3	1	0	23.79
				1	14	23.79
				8	4	23.14
				15	0	23.01
	707.5	23095		1	0	24.02
				1	14	24.02
				8	4	23.19
				15	0	23.08
	714.5	23165		1	0	24.09
				1	14	24.09
				8	4	23.14
				15	0	23.03
16QAM	700.5	23025	3	1	0	23.32
				1	14	23.32
				8	4	22.25
				15	0	22.04
	707.5	23095		1	0	23.43
				1	14	23.43
				8	4	22.22
				15	0	22.16
	714.5	23165		1	0	23.55
				1	14	23.55
				8	4	22.25
				15	0	21.99
64QAM	700.5	23025	3	1	0	23.14
				1	14	23.14
				8	4	22.23
				15	0	22.08
	707.5	23095		1	0	23.24
				1	14	23.24
				8	4	22.23
				15	0	22.14
	714.5	23165		1	0	23.21
				1	14	23.21
				8	4	22.15
				15	0	22.04

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	701.5	23035	5	1	0	23.86
				1	24	23.86
				12	6	23.21
				25	0	23.08
	707.5	23095		1	0	24.09
				1	24	24.09
				12	6	23.26
				25	0	23.15
	713.5	23155		1	0	24.16
				1	24	24.16
				12	6	23.21
				25	0	23.10
16QAM	701.5	23035	5	1	0	23.39
				1	24	23.39
				12	6	22.32
				25	0	22.11
	707.5	23095		1	0	23.50
				1	24	23.50
				12	6	22.29
				25	0	22.23
	713.5	23155		1	0	23.62
				1	24	23.62
				12	6	22.32
				25	0	22.06
64QAM	701.5	23035	5	1	0	23.21
				1	24	23.21
				12	6	22.30
				25	0	22.15
	707.5	23095		1	0	23.31
				1	24	23.31
				12	6	22.30
				25	0	22.21
	713.5	23155		1	0	23.28
				1	24	23.28
				12	6	22.22
				25	0	22.11

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	704	23060	10	1	0	<b>23.92</b>
				1	49	<b>23.92</b>
				24	12	23.27
				50	0	23.14
	707.5	23095		1	0	<b>24.15</b>
				1	49	<b>24.15</b>
				24	12	23.32
				50	0	23.21
	711	23130		1	0	<b>24.22</b>
				1	49	<b>24.22</b>
				24	12	23.27
				50	0	23.16
16QAM	704	23060	10	1	0	23.45
				1	49	23.45
				24	12	22.38
				50	0	22.17
	707.5	23095		1	0	23.56
				1	49	23.56
				24	12	22.35
				50	0	22.29
	711	23130		1	0	23.68
				1	49	23.68
				24	12	22.38
				50	0	22.12
64QAM	704	23060	10	1	0	23.27
				1	49	23.27
				24	12	22.36
				50	0	22.21
	707.5	23095		1	0	23.37
				1	49	23.37
				24	12	22.36
				50	0	22.27
	711	23130		1	0	23.34
				1	49	23.34
				24	12	22.28
				50	0	22.17



**LTE BAND13**

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	779.5	23205	5	1	0	24.46
				1	24	24.46
				12	6	24.03
				25	0	24.02
	782	23230		1	0	24.82
				1	24	24.82
				12	6	24.12
				25	0	24.08
	784.5	23255		1	0	24.89
				1	24	24.89
				12	6	24.08
				25	0	23.90
16QAM	779.5	23205	5	1	0	23.82
				1	24	23.82
				12	6	23.12
				25	0	23.04
	782	23230		1	0	23.87
				1	24	23.87
				12	6	23.07
				25	0	22.98
	784.5	23255		1	0	23.86
				1	24	23.86
				12	6	23.07
				25	0	22.93
64QAM	779.5	23205	5	1	0	23.84
				1	24	23.84
				12	6	23.12
				25	0	23.06
	782	23230		1	0	23.86
				1	24	23.86
				12	6	23.04
				25	0	22.96
	784.5	23255		1	0	23.85
				1	24	23.85
				12	6	23.04
				25	0	22.91

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	782	23230	10	1	0	<b>24.82</b>
				1	49	<b>24.82</b>
				24	12	24.12
				50	0	24.08
16QAM	782	23230	10	1	0	23.87
				1	49	23.87
				24	12	23.07
				50	0	22.98
64QAM	782	23230	10	1	0	23.86
				1	49	23.86
				24	12	23.04
				50	0	22.96

**LTE BAND66**

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1710.7	131979	1.4	1	0	24.57
				1	5	24.57
				3	2	23.69
				6	0	23.63
	1745	132322		1	0	24.63
				1	5	24.63
				3	2	23.74
				6	0	23.71
	1779.3	132665		1	0	24.60
				1	5	24.60
				3	2	23.70
				6	0	23.67
16QAM	1710.7	131979	1.4	1	0	23.83
				1	5	23.83
				3	2	22.72
				6	0	22.67
	1745	132322		1	0	23.72
				1	5	23.72
				3	2	22.71
				6	0	22.70
	1779.3	132665		1	0	23.71
				1	5	23.71
				3	2	22.77
				6	0	22.69
64QAM	1710.7	131979	1.4	1	0	23.71
				1	5	23.71
				3	2	22.68
				6	0	22.63
	1745	132322		1	0	23.70
				1	5	23.70
				3	2	22.67
				6	0	22.63
	1779.3	132665		1	0	23.70
				1	5	23.70
				3	2	22.74
				6	0	22.63

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1711.5	131987	3	1	0	24.60
				1	14	24.60
				8	4	23.72
				15	0	23.66
	1745	132322		1	0	24.66
				1	14	24.66
				8	4	23.77
				15	0	23.74
	1778.5	132657		1	0	24.63
				1	14	24.63
				8	4	23.73
				15	0	23.70
16QAM	1711.5	131987	3	1	0	23.86
				1	14	23.86
				8	4	22.75
				15	0	22.70
	1745	132322		1	0	23.75
				1	14	23.75
				8	4	22.74
				15	0	22.73
	1778.5	132657		1	0	23.74
				1	14	23.74
				8	4	22.80
				15	0	22.72
64QAM	1711.5	131987	3	1	0	23.74
				1	14	23.74
				8	4	22.71
				15	0	22.66
	1745	132322		1	0	23.73
				1	14	23.73
				8	4	22.70
				15	0	22.66
	1778.5	132657		1	0	23.73
				1	14	23.73
				8	4	22.77
				15	0	22.66

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1712.5	131997	5	1	0	24.64
				1	24	24.64
				12	6	23.76
				25	0	23.70
	1745	132322		1	0	24.70
				1	24	24.70
				12	6	23.81
				25	0	23.78
	1777.5	132647		1	0	24.67
				1	24	24.67
				12	6	23.77
				25	0	23.74
16QAM	1712.5	131997	5	1	0	23.90
				1	24	23.90
				12	6	22.79
				25	0	22.74
	1745	132322		1	0	23.79
				1	24	23.79
				12	6	22.78
				25	0	22.77
	1777.5	132647		1	0	23.78
				1	24	23.78
				12	6	22.84
				25	0	22.76
64QAM	1712.5	131997	5	1	0	23.78
				1	24	23.78
				12	6	22.75
				25	0	22.70
	1745	132322		1	0	23.77
				1	24	23.77
				12	6	22.74
				25	0	22.70
	1777.5	132647		1	0	23.77
				1	24	23.77
				12	6	22.81
				25	0	22.70

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1715	132022	10	1	0	24.67
				1	49	24.67
				24	12	23.79
				50	0	23.73
	1745	132322		1	0	24.73
				1	49	24.73
				24	12	23.84
				50	0	23.81
	1775	132622		1	0	24.70
				1	49	24.70
				24	12	23.80
				50	0	23.77
16QAM	1715	132022	10	1	0	23.93
				1	49	23.93
				24	12	22.82
				50	0	22.77
	1745	132322		1	0	23.82
				1	49	23.82
				24	12	22.81
				50	0	22.80
	1775	132622		1	0	23.81
				1	49	23.81
				24	12	22.87
				50	0	22.79
64QAM	1715	132022	10	1	0	23.81
				1	49	23.81
				24	12	22.78
				50	0	22.73
	1745	132322		1	0	23.80
				1	49	23.80
				24	12	22.77
				50	0	22.73
	1775	132622		1	0	23.80
				1	49	23.80
				24	12	22.84
				50	0	22.73

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1717.5	132047	15	1	0	24.69
				1	74	24.69
				40	18	23.81
				75	0	23.75
	1745	132322		1	0	24.75
				1	74	24.75
				40	18	23.86
				75	0	23.83
	1772.5	132597		1	0	24.72
				1	74	24.72
				40	18	23.82
				75	0	23.79
16QAM	1717.5	132047	15	1	0	23.95
				1	74	23.95
				40	18	22.84
				75	0	22.79
	1745	132322		1	0	23.84
				1	74	23.84
				40	18	22.83
				75	0	22.82
	1772.5	132597		1	0	23.83
				1	74	23.83
				40	18	22.89
				75	0	22.81
64QAM	1717.5	132047	15	1	0	23.83
				1	74	23.83
				40	18	22.80
				75	0	22.75
	1745	132322		1	0	23.82
				1	74	23.82
				40	18	22.79
				75	0	22.75
	1772.5	132597		1	0	23.82
				1	74	23.82
				40	18	22.86
				75	0	22.75

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1720	132072	20	1	0	<b>24.72</b>
				1	99	<b>24.72</b>
				50	25	23.84
				100	0	23.78
	1745	132322		1	0	<b>24.78</b>
				1	99	<b>24.78</b>
				50	25	23.89
				100	0	23.86
	1770	132572		1	0	<b>24.75</b>
				1	99	<b>24.75</b>
				50	25	23.85
				100	0	23.82
16QAM	1720	132072	20	1	0	23.98
				1	99	23.98
				50	25	22.87
				100	0	22.82
	1745	132322		1	0	23.87
				1	99	23.87
				50	25	22.86
				100	0	22.85
	1770	132572		1	0	23.86
				1	99	23.86
				50	25	22.92
				100	0	22.84
64QAM	1720	132072	20	1	0	23.86
				1	99	23.86
				50	25	22.83
				100	0	22.78
	1745	132322		1	0	23.85
				1	99	23.85
				50	25	22.82
				100	0	22.78
	1770	132572		1	0	23.85
				1	99	23.85
				50	25	22.89
				100	0	22.78



### 6.5 Carrier Aggregation Power Measurement result

When carrier aggregation is limited to downlink only, uplink maximum output power (single carrier) is measured for the supported combinations of downlink carrier aggregation listed in the table below. In applying the power measurement procedures of KDB 941225 D05A for DL CA to qualify for UL SAR test exclusion, power measurement is required only for the subset in each row with the largest combination of frequency bands and CCs (far right most configuration highlighted in the table below).

#### DL Inter-Band (2 Bands, 2CC,3CC,4CC) Upper Antenna

CA Configuration	Bands				DL												UL									
	PCC	S	T	Q	PCC			SCC			TCC			QCC			PCC									
	1st	2nd	3rd	4th	BW	Frq.	CH	BW	Frq.	CH	BW	Frq.	CH	BW	Frq.	CH	Modulation	R B	Off set	BW	Frq.	CH	Aggregated BW	CA Inactive	CA Active	Delta
CA_4A-5 A	4 A	5 A			20	213.5	217.5	10	881.5	252.5							QPSK	1	49	20	173.75	201.75	20	17.86	17.73	-0.13
	5 A	4 A			10	881.5	252.5	20	213.5	217.5							QPSK	1	24	10	836.5	205.25	20	22.39	22.24	-0.15
CA_4A-7 A	4 A	7 A			20	213.5	217.5	20	265.5	310.0							QPSK	1	49	20	173.75	201.75	30	17.86	17.73	-0.13
	7 A	4 A			20	265.5	310.0	20	213.5	217.5							QPSK	1	49	20	253.00	211.00	30	18.14	18.03	-0.11
CA_4A-7 C	4 A	7 C	7C		20	213.5	217.5	20	265.5	310.0	20	268.0	335.0				QPSK	1	49	20	173.75	201.75	60	17.86	17.73	-0.13
	7 C	7 C	4 A		20	265.5	310.0	20	268.0	335.0	20	213.5	217.5				QPSK	1	49	20	253.00	211.00	60	18.14	18.03	-0.11
CA_5A-7 A	5 A	7 A			10	881.5	252.5	20	265.5	310.0							QPSK	1	24	10	836.5	205.25	30	22.39	22.24	-0.15
	7 A	5 A			20	265.5	310.0	10	881.5	252.5							QPSK	1	49	20	253.00	211.00	30	18.14	18.03	-0.11
CA_5A-7 C	5 A	7 C	7C		10	881.5	252.5	20	265.5	310.0	20	268.0	335.0				QPSK	1	24	10	836.5	205.25	50	22.39	22.24	-0.15
	7 C	7 C	5 A		20	265.5	310.0	20	268.0	335.0	10	881.5	252.5				QPSK	1	49	20	253.00	211.00	50	18.14	18.03	-0.11
CA_7A-6 6A-6A	7 A	66 A	66 A		20	265.5	310.0	20	214.86	667.86	20	214.86	667.86				QPSK	1	49	20	253.00	211.00	60	18.14	18.03	-0.11
	66 A	66 A	7 A		20	214.86	667.86	20	214.86	667.86	20	265.5	310.0				QPSK	1	49	20	174.32	132.32	60	17.99	17.96	-0.03
CA_7C-66 A-66A	7 C	7 C	66 A	66 A	20	265.5	310.0	20	268.0	335.0	20	214.86	667.86	20	21	45	667.86	1	49	20	253.00	211.00	80	18.14	18.03	-0.11
	66 A	66 A	7 C	7 C	20	214.86	667.86	20	214.86	667.86	20	265.5	310.0	20	26	80	335.0	QPSK	1	49	20	174.32	132.32	80	17.99	17.96

#### DL Inter-Band (2 Bands, 2CC,3CC,4CC) Down Antenna

CA Configuration	Bands				DL												UL									
	PCC	S	T	Q	PCC			SCC			TCC			QCC			PCC									
	1st	2nd	3rd	4th	BW	Frq.	CH	BW	Frq.	CH	BW	Frq.	CH	BW	Frq.	CH	Modulation	R B	Off set	BW	Frq.	CH	Aggregated BW	CA Inactive	CA Active	Delta
CA_4A-5 A	4 A	5 A			20	213.75	217.75	10	881.5	252.5							QPSK	1	49	20	173.75	201.75	20	24.26	24.18	-0.08
	5 A	4 A			10	881.5	252.5	20	213.75	217.75							QPSK	1	24	10	836.5	205.25	20	24.88	24.79	-0.09
CA_4A-7 A	4 A	7 A			20	213.75	217.75	20	265.5	310.0							QPSK	1	49	20	173.75	201.75	30	24.26	24.18	-0.08
	7 A	4 A			20	265.5	310.0	20	213.75	217.75							QPSK	1	49	20	253.00	211.00	30	24.32	24.24	-0.08
CA_4A-7 C	4 A	7 C	7C		20	213.75	217.75	20	265.5	310.0	20	268.0	33.0				QPSK	1	49	20	173.75	201.75	60	24.26	24.18	-0.08
	7 C	7 C	4 A		20	265.5	310.0	20	268.0	33.0	20	213.75	217.75				QPSK	1	49	20	253.00	211.00	60	24.32	24.24	-0.08
CA_5A-7 A	5 A	7 A			10	881.5	252.5	20	265.5	310.0							QPSK	1	24	10	836.5	205.25	30	24.88	24.79	-0.09
	7 A	5 A			20	265.5	310.0	10	881.5	252.5							QPSK	1	49	20	253.00	211.00	30	24.32	24.24	-0.08
CA_5A-7 C	5 A	7 C	7C		10	881.5	252.5	20	265.5	310.0	20	268.0	33.0				QPSK	1	24	10	836.5	205.25	50	24.88	24.79	-0.09
	7 C	7 C	5 A		20	265.5	310.0	20	268.0	33.0	10	881.5	252.5				QPSK	1	49	20	253.00	211.00	50	24.32	24.24	-0.08
CA_7A-6 6A-6A	7 A	66 A	66 A		20	265.5	310.0	20	214.86	667.86	20	214.86	667.86				QPSK	1	49	20	253.00	211.00	60	24.32	24.24	-0.08
	66 A	66 A	7 A		20	214.86	667.86	20	214.86	667.86	20	265.5	310.0				QPSK	1	49	20	174.32	132.32	60	24.78	24.64	-0.14
CA_7C-66 A-66A	7 C	7 C	66 A	66 A	20	265.5	310.0	20	268.0	33.0	20	214.86	667.86	20	21	45	667.86	1	49	20	253.00	211.00	80	24.32	24.24	-0.08
	66 A	66 A	7 C	7 C	20	214.86	667.86	20	214.86	667.86	20	265.5	310.0	20	26	80	33.0	QPSK	1	49	20	174.32	132.32	80	24.78	24.64

In applying the power measurement procedures of KDB 941225 D05A for DL CA to qualify for UL SAR test exclusion, power measurement is required only for the CA configuration with the largest aggregated DL CA BW in each frequency band, independently for contiguous and non-contiguous CA; however, if the same frequency band is used for both contiguous and non-contiguous CA, power measurement was performed using the configuration with the largest aggregated BW and maximum output power among contiguous and non-contiguous CA

CA configuration
DL Intra-Band Non-Contiguous
CA_66A_66A

### DL Intra-Band Non-Contiguous Upper Antenna

CA Configuration	Bands		DL						UL									
	PCC		PCC			SCC			PCC									
	1st	2nd	BW	Freq.	CH	BW	Freq.	CH	Modulation	RB	Offset	BW	Freq.	CH	Aggregated BW	CA Inactive	CA Active	Delta
CA_66A-66A	66A	66A	20	2145	66786	20	2170	67035	QPSK	1	99	20	1475	132322	40	17.99	17.96	-0.03

### DL Intra-Band Non-Contiguous Down Antenna

CA Configuration	Bands		DL						UL									
	PCC		PCC			SCC			PCC									
	1st	2nd	BW	Freq.	CH	BW	Freq.	CH	Modulation	RB	Offset	BW	Freq.	CH	Aggregated BW	CA Inactive	CA Active	Delta
CA_66A-66A	66A	66A	20	2145	66786	20	2170	67035	QPSK	1	99	20	1475	132322	40	24.78	24.64	-0.14

### Summary for SAR Test Exclusion for LTE Downlink CA

Per power confirmation results in above, the uplink maximum output power with downlink CA active remains within the specified tune-up tolerance and not more than 0.25dB higher than the maximum output power with downlink CA inactive. According to KDB 941225 D05A, the SAR test exclusion applies to LTE downlink CA operation.

## **LTE-uplink 2CA Band 7 (20MHz + 20MHz BW)**

SAR Testing was performed on each antenna – up Ant and down Ant. PCC channel was determined and selected closest to the worst case SAR configuration from standalone reported SAR result. PCC and SCC channels were determined and selected to allow contiguous CA. RB allocations and offsets were selected to allow maximum measured output power. Output power was measured and verified for these test cases.

Uplink CA shall be tested based on the worst-case SAR configuration determined from non-CA SAR testing result. The channel BW, channel number, RB allocation, etc. would be selected to allow contiguous CA of PCC and SCC. One SAR configuration will be selected for UAT and one SAR configuration will be selected for LAT for each supported CA configuration. Uplink output power for UL CA is the total power measured across the PCC and SCC.

UL CA power measurements were performed for both antennas (up Ant and down Ant) at with QPSK modulation based on the worst-case standalone SAR. The tune-up limits are provided in Section 6.1 of this report.

The UL CA mode power measurements represent the total power across both carriers. Measurements were made for all supported PCC bandwidths using the channel/RB combination resulting in the highest standalone output power at the least MPR (0 dB). SCCs were set to use configurations similar to the PCC to establish conservative or worst case equivalent SAR test conditions (highest maximum power with MPR of 0 dB).

The standalone power measurement is the power for the PCC in the non-CA mode (i.e. single carrier power). In all cases the UL CA power is less than or equal to the standalone power, which is in accordance with the tune-up limits in Section 6.1 of this report.

### LTE-uplink 2CA CA\_7C power measurements result

RF Exposure Conditions	Ant	E-UTRA CA	Bands		UL																				
			PCC	SCC	PCC					SCC					Standalone		PCC+SCC								
			1st	2nd	Modulation	RB Size	RB Offset	BW	Freq. (MHz)	Channel	Modulation	RB Size	RB Offset	BW	Freq. (MHz)	Channel	MPR	PCC CA Inactive	SCC CA Inactive	Aggregated BW	MPR	Tune-Up Limit	CA Power (Total PCC+SCC)	Delta	3GPP Rel. #
Head	up	CA_7C	7C	7C	QPSK	1	99	20	2510	20850	QPSK	1	0	20	2529.8	21048	0	18.27	18.27	40	0	18.5	18.14	-0.1	13
Head	up	CA_7C	7C	7C	QPSK	1	99	20	2535	21100	QPSK	1	0	20	2554.8	21298	0	18.14	18.14	40	0	18.5	18.04	-0.1	13
Head	up	CA_7C	7C	7C	QPSK	1	0	20	2560	21350	QPSK	1	99	20	2540.2	21152	0	18.07	18.07	40	0	18.5	18.03	0.0	13
Body-worn	up	CA_7C	7C	7C	QPSK	1	99	20	2510	20850	QPSK	1	0	20	2529.8	21048	0	18.27	18.27	40	0	18.5	18.14	-0.1	13
Body-worn	up	CA_7C	7C	7C	QPSK	1	99	20	2535	21100	QPSK	1	0	20	2554.8	21298	0	18.14	18.14	40	0	18.5	18.84	0.7	13
Body-worn	up	CA_7C	7C	7C	QPSK	1	0	20	2560	21350	QPSK	1	99	20	2540.2	21152	0	18.07	18.07	40	0	18.5	18.73	0.7	13
Head	down	CA_7C	7C	7C	QPSK	1	99	20	2510	20850	QPSK	1	0	20	2529.8	21048	0	24.45	24.45	40	0	24.5	24.32	-0.1	13
Head	down	CA_7C	7C	7C	QPSK	1	99	20	2535	21100	QPSK	1	0	20	2554.8	21298	0	24.32	24.32	40	0	24.5	24.18	-0.1	13
Head	down	CA_7C	7C	7C	QPSK	1	0	20	2560	21350	QPSK	1	99	20	2540.2	21152	0	24.25	24.25	40	0	24.5	24.07	-0.2	13
Body-worn	down	CA_7C	7C	7C	QPSK	1	99	20	2510	20850	QPSK	1	0	20	2529.8	21048	0	24.45	24.45	40	0	24.5	24.32	-0.1	13
Body-worn	down	CA_7C	7C	7C	QPSK	1	99	20	2535	21100	QPSK	1	0	20	2554.8	21298	0	24.32	24.32	40	0	24.5	24.18	-0.1	13
Body-worn	down	CA_7C	7C	7C	QPSK	1	0	20	2560	21350	QPSK	1	99	20	2540.2	21152	0	24.25	24.25	40	0	24.5	24.07	-0.2	13

### LTE-uplink 2CA CA\_7C power measurements result

RF Exposure Conditions	Mode	Ant	Dist. (mm)	Test Position	PCC				SCC				Power (dBm)			1-g SAR (W/kg)	
					Ch #.	Freq. (MHz)	RB Allocation	RB offset	Ch #.	Freq. (MHz)	RB Allocation	RB offset	MPR	Tune-up limit	Meas.	Meas.	Scaled
Head	QPSK	up	0	Right Tilt	21100	2535.0	1	99	21298	2554.8	1	0	0	18.5	18.14	0.713	0.777
Body-worn	QPSK	up	10	Top	21100	2535.0	1	99	21298	2554.8	1	0	0	18.5	18.14	0.261	0.284
Head	QPSK	down	0	Left Tilt	21100	2535.0	1	99	21298	2554.8	1	0	0	24.5	24.18	0.188	0.203
Body-worn	QPSK	down	10	Back	21100	2535.0	1	99	21298	2554.8	1	0	0	24.5	24.18	0.628	0.678

## 6.6 Bluetooth Measurement result

Modulation type	Test Result (dBm)		
	2402MHz (Ch0)	2441MHz (Ch39)	2480MHz (Ch78)
GFSK	8.14	8.42	7.82
$\pi/4$ DQPSK	3.54	4.91	1.54
8DPSK	3.61	4.98	1.52
Modulation type	2402MHz (Ch0)	2440MHz (Ch19)	2480MHz (Ch39)
GFSK (BLE1Mbps)	4.73	5.51	2.71
GFSK (BLE2Mbps)	1.98	2.70	0.12

## 6.7 Wi-Fi Measurement result

### WIFI 2.4GHz

#### Average power in SISO Mode

Test Mode	Ant	Average power (dBm)		
		2412MHz	2437MHz	2462MHz
802.11b	Ant1	<b>15.92</b>	<b>16.01</b>	<b>15.96</b>
802.11b	Ant2	<b>16.05</b>	<b>16.11</b>	<b>16.08</b>
802.11g	Ant1	14.71	14.74	14.78
802.11g	Ant2	14.83	14.88	14.84
802.11n HT20	Ant1	14.78	14.83	14.86
802.11n HT20	Ant2	14.87	14.92	14.97
Test Mode	Ant	Average power (dBm)		
		2422MHz	2437MHz	2452MHz
802.11n HT40	Ant1	14.63	14.67	14.71
802.11n HT40	Ant2	14.76	14.79	14.82

#### Average power in MIMO Mode

Test Mode	Ant	Average power (dBm)		
		2412MHz	2437MHz	2462MHz
802.11n HT20	Ant1	14.71	14.74	14.82
802.11n HT20	Ant2	14.82	14.87	14.91
802.11n HT20	Ant1+Ant2	<b>17.78</b>	<b>17.82</b>	<b>17.88</b>
Test Mode	Ant	Average power (dBm)		
		2422MHz	2437MHz	2452MHz
802.11n HT40	Ant1	14.58	14.62	14.65
802.11n HT40	Ant2	14.66	14.69	14.74
802.11n HT40	Ant1+Ant2	17.63	17.67	17.71

### WIFI 2.4GHz\*

#### Average power in SISO Mode

Test Mode	Ant	Average power (dBm)		
		2412MHz	2437MHz	2462MHz
802.11b	Ant1	<b>13.48</b>	<b>13.45</b>	<b>13.40</b>
802.11b	Ant2	<b>13.92</b>	<b>13.86</b>	<b>13.77</b>
802.11g	Ant1	13.37	13.44	13.48
802.11g	Ant2	13.63	13.68	13.72
802.11n HT20	Ant1	13.13	13.07	13.02
802.11n HT20	Ant2	13.58	13.51	13.46
Test Mode	Ant	Average power (dBm)		
		2422MHz	2437MHz	2452MHz
802.11n HT40	Ant1	12.88	12.81	12.78
802.11n HT40	Ant2	13.32	13.27	13.22

#### Average power in MIMO Mode

Test Mode	Ant	Average power (dBm)		
		2412MHz	2437MHz	2462MHz
802.11n HT20	Ant1	13.03	12.93	12.84
802.11n HT20	Ant2	13.24	13.17	13.13
802.11n HT20	Ant1+Ant2	<b>16.15</b>	<b>16.06</b>	<b>16.00</b>
Test Mode	Ant	Average power (dBm)		
		2422MHz	2437MHz	2452MHz
802.11n HT40	Ant1	13.03	12.88	12.79
802.11n HT40	Ant2	13.17	13.11	13.07
802.11n HT40	Ant1+Ant2	16.11	16.01	15.94

**\*Note: There is the power reduction of Wi-Fi 2.4GHz is activated when simultaneous transmission for GSM/WCDMA/LTE Antenna and Wi-Fi 2.4GHz Antenna (calling mode-head position)**

### WIFI 5GHz

Band	Test Mode	Ant	Average Power(dBm)		
			5180 MHz	5200 MHz	5240MHz
U-NII-1	802.11a	Ant1	<b>15.46</b>	<b>15.53</b>	<b>15.49</b>
	802.11a	Ant2	<b>15.78</b>	<b>15.88</b>	<b>15.73</b>
	802.11n HT20	Ant1	14.41	14.47	14.44
	802.11n HT20	Ant2	14.83	14.86	14.77
	802.11n HT20	MIMO	<b>17.64</b>	<b>17.68</b>	<b>17.62</b>
	802.11ac VHT20	Ant1	11.33	11.29	11.41
	802.11ac VHT20	Ant2	11.68	10.72	11.64
	802.11ac VHT20	MIMO	14.52	14.02	14.54
	Test Mode	Ant	Average Power(dBm)		
			5190 MHz	5230 MHz	
	802.11n HT40	Ant1	14.12	14.15	
	802.11n HT40	Ant2	14.54	14.55	
	802.11n HT40	MIMO	17.35	17.36	
	802.11ac VHT40	Ant1	11.81	11.87	
	802.11ac VHT40	Ant2	12.11	12.15	
	802.11ac VHT40	MIMO	14.97	15.02	
	Test Mode	Ant	Average Power(dBm)		
			5210 MHz		
	802.11ac VHT80	Ant1	11.75		
	802.11ac VHT80	Ant2	11.93		
802.11ac VHT80	MIMO	14.85			
Band	Test Mode	Ant	Average Power(dBm)		
			5745 MHz	5785 MHz	5825MHz
U-NII-3	802.11a	Ant1	<b>13.81</b>	<b>13.88</b>	<b>13.97</b>
	802.11a	Ant2	<b>14.17</b>	<b>14.28</b>	<b>14.34</b>
	802.11n HT20	Ant1	13.31	13.37	13.44
	802.11n HT20	Ant2	13.72	13.83	13.88
	802.11n HT20	MIMO	<b>16.53</b>	<b>16.62</b>	<b>16.68</b>
	802.11ac VHT20	Ant1	11.13	11.17	11.25
	802.11ac VHT20	Ant2	11.48	11.57	11.64
	802.11ac VHT20	MIMO	14.32	14.38	14.46
	Test Mode	Ant	Average Power(dBm)		
			5755 MHz	5795 MHz	
	802.11n HT40	Ant1	13.24	13.39	
	802.11n HT40	Ant2	13.70	13.87	
	802.11n HT40	MIMO	16.49	16.65	
	802.11ac VHT40	Ant1	12.10	12.15	
	802.11ac VHT40	Ant2	12.39	12.43	
	802.11ac VHT40	MIMO	15.26	15.30	
	Test Mode	Ant	Average Power(dBm)		
			5775		
	802.11ac VHT80	Ant1	11.88		
	802.11ac VHT80	Ant2	12.11		
802.11ac VHT80	MIMO	15.01			



## 6.8 Standalone SAR Test Exclusion Considerations

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

### SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and $\leq 50$ mm

#### Method1:

According to the KDB447498 4.3.1 (1)

For 100 MHz to 6 GHz and test separation distances  $\leq 50$  mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f} (\text{GHz})] \leq 3.0$  for 1-g SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion.

This is equivalent to  $[(\text{max. power of channel, including tune-up tolerance, mW}) / (60 / \sqrt{f} (\text{GHz}) \text{ mW})] \cdot [20 \text{ mm} / (\text{min. test separation distance, mm})] \leq 1.0$  for 1-g SAR; also see Appendix A for approximate exclusion threshold values at selected frequencies and distances.

**Method2:**

According to the KDB447498 appendix A

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	<i>SAR Test Exclusion Threshold (mW)</i>
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

According to KDB 248227 D01 802 11 Wi-Fi SAR chapter 5.3.1 b)

For devices that operate in only one of the U-NII-1 and U-NII-2A bands, the normally required SAR procedures for OFDM configurations are applied. For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following, with respect to the highest *reported* SAR and maximum output power specified for production units. The procedures are applied independently to each exposure configuration; for example, head, body, hotspot mode etc. When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest *reported* SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is  $\leq 1.2$  W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, each band is tested independently for SAR.

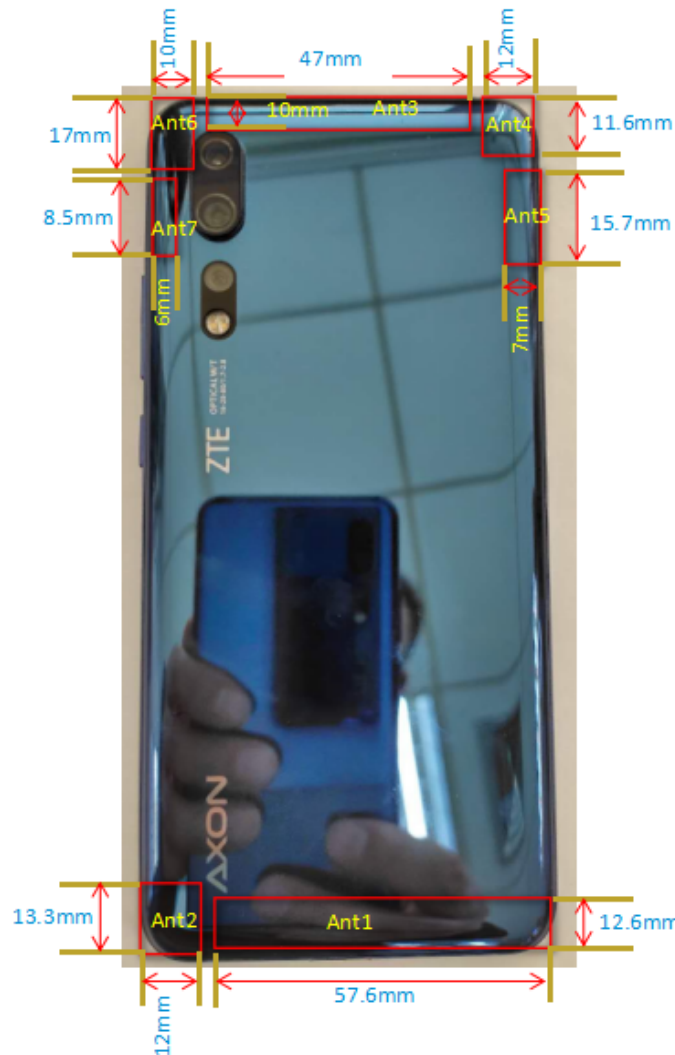
### Summary of Transmitters

Band/Mode	Position	SAR test exclusion threshold (mW)	Max conducted power adjusted for tune-up tolerance(mW)	Standalone SAR Required
2.4GHz BT/BLE	Head	10	6.95	Yes
	Body	19	6.95	Yes *
2.4GHz Wi-Fi ANT1	Head	10	39.90	Yes
	Body	19	39.90	Yes
2.4GHz Wi-Fi ANT2	Head	10	40.83	Yes
	Body	19	40.83	Yes
2.4GHz Wi-Fi MIMO	Head	10	61.38	Yes
	Body	19	61.38	Yes
5GHz U-NII1 WI-FI (5200MHz) ANT1	Head	7	35.73	Yes
	Body	13	35.73	Yes
5GHz U-NII1 WI-FI (5200MHz) ANT2	Head	7	38.73	Yes
	Body	13	38.73	Yes
5GHz U-NII1 WI-FI (5200MHz) MIMO	Head	7	54.70	Yes
	Body	13	54.70	Yes
5GHz U-NII3 WI-FI (5785MHz) ANT1	Head	6	24.95	Yes
	Body	12	24.95	Yes
5GHz U-NII3 WI-FI (5785MHz) ANT2	Head	6	27.16	Yes
	Body	12	27.16	Yes
5GHz U-NII3 WI-FI (5785MHz) MIMO	Head	6	46.56	Yes
	Body	12	46.56	Yes

**Note\*:** According to KDB 447498 D01 “For situations where the estimated SAR is overly conservative for certain conditions, the test lab may choose to perform standalone SAR measurements, then use the measured SAR to determine simultaneous transmission SAR test exclusion. “

## 6.9 RF exposure conditions

Refer to the follow picture “Antenna Locations & Separation Distances” for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.



- Ant1: LTE FDD B5/12/13/28(RX&TX); WCDMA B5(RX&TX); GSM850/900(RX&TX)
- Ant2: LTE FDD B2/3/4/7/66(RX&TX) ; WCDMA B2(RX&TX); GSM1800/1900(RX&TX)
- Ant3: LTE FDD B5/12/13/28(RX&TX); WCDMA B5(RX&TX); GSM850/900(RX&TX)
- Ant4: LTE FDD B2/3/4/7/66(RX&TX) ; WCDMA B2(RX&TX); GSM1800/1900(RX&TX)
- Ant5: Wi-Fi Main(2412MHz~2472MHz, 5150MHz~5850MHz)
- Ant6:GPS/Wi-Fi MIMO(2412MHz~2472MHz)
- Ant7:Wi-Fi MIMO(5150MHz~5850MHz)

**6.9.1 Head Exposure Conditions**

**Up Antenna**

**For WWAN**

Test Configurations	SAR Required	Note
Left Touch	yes	/
Left Tilt (15°)	yes	/
Right Touch	yes	/
Right Tilt (15°)	yes	/

**For WLAN&BT/BLE**

Test Configurations	SAR Required	Note
Left Touch	yes	/
Left Tilt (15°)	yes	/
Right Touch	yes	/
Right Tilt (15°)	yes	/

**Down Antenna**

**For WWAN**

Test Configurations	SAR Required	Note
Left Touch	yes	/
Left Tilt (15°)	yes	/
Right Touch	yes	/
Right Tilt (15°)	yes	/

**6.9.2 Body Exposure conditions**

**Up Antenna**

**For WWAN**

Test Configurations	SAR Required	Note
Back	yes	/
Front	yes	/

**For WLAN&BT/BLE**

Test Configurations	SAR Required	Note
Back	yes	/
Front	yes	/

**Down Antenna**

**For WWAN**

Test Configurations	SAR Required	Note
Back	yes	/
Front	yes	/

### 6.9.3 Hotspot Exposure conditions

#### Up Antenna

##### For WWAN

Test Configurations	Antenna-to-edge/surface	SAR Required
Back	<25 mm	Yes
Front	<25 mm	Yes
Top	<25 mm	Yes
Bottom	>25 mm	No
Right	<25 mm	Yes
Left	<25 mm	Yes

##### For WLAN&BT/BLE

Test Configurations	Antenna-to-edge/surface	SAR Required
Back	<25 mm	Yes
Front	<25 mm	Yes
Top	<25 mm	Yes
Bottom	>25 mm	No
Left	>25 mm	No
Right	<25 mm	Yes

#### Down Antenna

##### For WWAN

Test Configurations	Antenna-to-edge/surface	SAR Required
Back	<25 mm	Yes
Front	<25 mm	Yes
Top	>25 mm	No
Bottom	<25 mm	Yes
Left	<25 mm	Yes
Right	<25 mm	Yes

**Note: For hotspot mode, it's not necessary test Rear and Front position cause we already test the these position without hotspot mode in Body Exposure conditions, Normally if the hotspot mode opened, the technology "power reduction" used for mobile, so we consider the worst condition, and remain the data of body worn as hotspots mode.**

## 6.10 System Checking

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulants were measured every day using the dielectric probe kit and the network analyser. A system check measurement was made following the determination of the dielectric parameters of the simulant, using the dipole validation kit. A power level of 250 mW was supplied to the dipole antenna **except D5GHzV2 used 10mW**, which was placed under the flat section of the twin SAM phantom. The system checking results (dielectric parameters and SAR values) are given in the table below.

Date Tested	System dipole	T.S. Liquid	SAR measured (normalized to 1W)		Target (Ref. Value)	Delta (%)	Tolerance (%)
			1g				
2019.05.20	D750V3	Head	1g	8.44	8.26	2.2	±10
2019.05.21	D750V3	Head	1g	8.72	8.26	5.6	±10
2019.05.22	D835V2	Head	1g	9.44	9.37	0.7	±10
2019.05.23	D835V2	Head	1g	9.4	9.37	0.3	±10
2019.05.24	D835V2	Head	1g	9.16	9.37	-2.2	±10
2019.05.25	D1800V2	Head	1g	38.28	38.9	-1.6	±10
2019.05.26	D1800V2	Head	1g	37.84	38.9	-2.7	±10
2019.05.27	D2000V2	Head	1g	38.6	40.3	-4.2	±10
2019.05.28	D2000V2	Head	1g	41.2	40.3	2.2	±10
2019.05.29	D2450V2	Head	1g	54.4	52.4	3.8	±10
2019.05.31	D2450V2	Head	1g	51.2	52.4	-2.3	±10
2019.06.03	D5GHzV2	Head	1g	78.7	81.3	-3.2	±10
2019.06.05	D5GHzV2	Head	1g	77.5	78.7	-1.5	±10

Date Tested	System dipole	T.S. Liquid	SAR measured (normalized to 1W)		Target (Ref. Value)	Delta (%)	Tolerance (%)
			1g				
2019.05.20	D750V3	Body	1g	8.24	8.69	-5.2	±10
2019.05.21	D750V3	Body	1g	8.72	8.69	0.3	±10
2019.05.22	D835V2	Body	1g	9.48	9.47	0.1	±10
2019.05.23	D835V2	Body	1g	9.36	9.47	-1.2	±10
2019.05.24	D835V2	Body	1g	9.12	9.47	-3.7	±10
2019.05.25	D1800V2	Body	1g	38.2	39.7	-3.8	±10
2019.05.26	D1800V2	Body	1g	38.68	39.7	-2.6	±10
2019.05.27	D2000V2	Body	1g	37.96	40.3	-5.8	±10
2019.05.28	D2000V2	Body	1g	38.84	40.3	-3.6	±10
2019.05.29	D2450V2	Body	1g	52.8	52.3	1.0	±10
2019.05.31	D2450V2	Body	1g	53.2	52.3	1.7	±10
2019.06.03	D5GHzV2	Body	1g	73.0	76.9	-5.1	±10
2019.06.05	D5GHzV2	Body	1g	75.0	77.5	-3.2	±10

According to KDB 865664 D01&IEEE 1528-2013, 2450MHz system check could cover the frequency range from 2205MHz to 2695 MHz

Plots of the system checking scans are given in Appendix A.

Tissue Simulants used in the Measurements

For the measurement of the following parameters the SPEAG DAKS-3.5 dielectric parameter probe is used, representing the open-ended coaxial probe measurement procedure.

Date Tested	Freq. (MHz)	Liquid parameters	measured	Target	Delta (%)	Tolerance (%)
2019.05.20	Head 750	$\epsilon_r$	42.068	41.90	0.4	$\pm 5$
		$\sigma$ [S/m]	0.917	0.89	3.0	$\pm 5$
2019.05.21	Head 750	$\epsilon_r$	42.153	41.90	0.6	$\pm 5$
		$\sigma$ [S/m]	0.922	0.89	3.6	$\pm 5$
2019.05.22	Head 835	$\epsilon_r$	42.529	41.50	2.5	$\pm 5$
		$\sigma$ [S/m]	0.912	0.90	1.3	$\pm 5$
2019.05.23	Head 835	$\epsilon_r$	40.217	41.50	-3.1	$\pm 5$
		$\sigma$ [S/m]	0.908	0.90	0.9	$\pm 5$
2019.05.24	Head 835	$\epsilon_r$	41.114	41.50	-0.9	$\pm 5$
		$\sigma$ [S/m]	0.915	0.90	1.7	$\pm 5$
2019.05.25	Head 1800	$\epsilon_r$	38.905	40.00	-2.7	$\pm 5$
		$\sigma$ [S/m]	1.409	1.40	0.6	$\pm 5$
2019.05.26	Head 1800	$\epsilon_r$	40.607	40.00	1.5	$\pm 5$
		$\sigma$ [S/m]	1.411	1.40	0.8	$\pm 5$
2019.05.27	Head 2000	$\epsilon_r$	39.815	40.00	-0.5	$\pm 5$
		$\sigma$ [S/m]	1.435	1.40	2.5	$\pm 5$
2019.05.28	Head 2000	$\epsilon_r$	40.245	40.00	0.6	$\pm 5$
		$\sigma$ [S/m]	1.384	1.40	-1.1	$\pm 5$
2019.05.29	Head 2450	$\epsilon_r$	38.145	39.20	-2.7	$\pm 5$
		$\sigma$ [S/m]	1.873	1.80	4.1	$\pm 5$
2019.05.31	Head 2450	$\epsilon_r$	39.583	39.20	1.0	$\pm 5$
		$\sigma$ [S/m]	1.833	1.80	1.8	$\pm 5$
2019.06.03	Head 5300	$\epsilon_r$	36.853	35.9	2.7	$\pm 5$
		$\sigma$ [S/m]	4.683	4.76	-1.6	$\pm 5$
2019.06.05	Head 5800	$\epsilon_r$	36.334	35.3	2.9	$\pm 5$
		$\sigma$ [S/m]	5.185	5.27	-1.6	$\pm 5$
2019.06.06	Head 2600	$\epsilon_r$	40.22	39	3.1	$\pm 5$
		$\sigma$ [S/m]	2.01	1.96	2.6	$\pm 5$



Date Tested	Freq. (MHz)	Liquid parameters	measured	Target	Delta (%)	Tolerance (%)
2019.05.20	Body 750	$\epsilon_r$	53.279	55.50	-4.0	$\pm 5$
		$\sigma[S/m]$	0.976	0.96	1.7	$\pm 5$
2019.05.21	Body 750	$\epsilon_r$	54.321	55.50	-2.1	$\pm 5$
		$\sigma[S/m]$	0.954	0.96	-0.6	$\pm 5$
2019.05.22	Body 835	$\epsilon_r$	54.541	55.20	-1.2	$\pm 5$
		$\sigma[S/m]$	0.975	0.97	0.5	$\pm 5$
2019.05.23	Body 835	$\epsilon_r$	55.036	55.20	-0.3	$\pm 5$
		$\sigma[S/m]$	0.971	0.97	0.1	$\pm 5$
2019.05.24	Body 835	$\epsilon_r$	56.196	55.20	1.8	$\pm 5$
		$\sigma[S/m]$	0.966	0.97	-0.4	$\pm 5$
2019.05.25	Body 1800	$\epsilon_r$	52.879	53.30	-0.8	$\pm 5$
		$\sigma[S/m]$	1.523	1.52	0.2	$\pm 5$
2019.05.26	Body 1800	$\epsilon_r$	51.717	53.30	-3.0	$\pm 5$
		$\sigma[S/m]$	1.542	1.52	1.4	$\pm 5$
2019.05.27	Body 2000	$\epsilon_r$	52.557	53.30	-1.4	$\pm 5$
		$\sigma[S/m]$	1.546	1.52	1.7	$\pm 5$
2019.05.28	Body 2000	$\epsilon_r$	52.596	53.30	-1.3	$\pm 5$
		$\sigma[S/m]$	1.586	1.52	4.3	$\pm 5$
2019.05.29	Body 2450	$\epsilon_r$	50.795	52.70	-3.6	$\pm 5$
		$\sigma[S/m]$	1.926	1.95	-1.2	$\pm 5$
2019.05.31	Body 2450	$\epsilon_r$	51.046	52.70	-3.1	$\pm 5$
		$\sigma[S/m]$	2.027	1.95	3.9	$\pm 5$
2019.06.03	Body 5300	$\epsilon_r$	49.035	48.9	0.3	$\pm 5$
		$\sigma[S/m]$	5.355	5.42	-1.2	$\pm 5$
2019.06.05	Body 5800	$\epsilon_r$	47.36	48.2	-1.7	$\pm 5$
		$\sigma[S/m]$	6.11	6.00	1.8	$\pm 5$
2019.06.06	Body 2600	$\epsilon_r$	51.4	52.5	-2.1	$\pm 5$
		$\sigma[S/m]$	2.22	2.16	2.8	$\pm 5$

## 6.11 SAR TEST RESULT

In order to determine the largest value of the peak spatial-average SAR of a handset, all device positions, configurations, and operational modes should be tested for each frequency band according to Steps 1 to 3 below.

Step 1: The tests should be performed at the channel that is closest to the center of the transmit frequency band.

a) All device positions (cheek and tilt, for both left and right sides of the SAM phantom),  
b) All configurations for each device position in a), e.g., antenna extended and retracted, and  
c) All operational modes for each device position in item a) and configuration in item b) in each frequency band, e.g., analog and digital, If more than three frequencies need to be tested (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 the highest peak spatial-average SAR determined in Step 1 for each frequency, perform all tests at all other test frequency channels, e.g., 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 should be tested as well.

Step 3: Examine all data to determine the largest value of the peak.

Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.

Scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.

Reported SAR (W/kg) = Measured SAR (W/kg) \* Scaling Factor

2. Per KDB 447498 D01v06, for each exposure position, if the highest output channel reported SAR  $\leq 0.8$ W/kg, other channels SAR testing are not necessary.

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

The measured and reported Head/body SAR values for the test device are tabulated below:

**Up Antenna**

**Mode: GSM 850(GPRS)**

fL(MHz)=824.2MHz

fM(MHz)=836.5MHz

fH(MHz)= 848.8MHz

SAR Values (850MHz Band)

**Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	GPRS 3TX (head)	L1	29.28	29.50	1.05	0.916	0.962
		M1	29.22	29.50	1.07	0.945	1.011
		H1	29.16	29.50	1.08	0.885	0.956
		L2	29.28	29.50	1.05	0.912	0.959
		M2	29.22	29.50	1.07	0.943	1.006
		H2	29.16	29.50	1.08	0.884	0.956
Left Tilted	GPRS 3TX (head)	L	29.28	29.50	1.05	---	---
		M	29.22	29.50	1.07	0.698	0.747
		H	29.16	29.50	1.08	---	---
Right cheek	GPRS 3TX (head)	L1	29.28	29.50	1.05	0.998	1.048
		M1	29.22	29.50	1.07	<b>1.020</b>	<b>1.091</b>
		H1	29.16	29.50	1.08	0.893	0.964
		L2	29.28	29.50	1.05	0.972	1.023
		M2	29.22	29.50	1.07	1.010	1.077
		H2	29.16	29.50	1.08	0.890	0.962
Right Tilted	GPRS 3TX (head)	L	29.28	29.50	1.05	---	---
		M	29.22	29.50	1.07	0.687	0.735
		H	29.16	29.50	1.08	---	---
Back	GPRS 3TX (body-worn)	L	29.28	29.50	1.05	---	---
		M	29.22	29.50	1.07	<b>0.234</b>	<b>0.250</b>
		H	29.16	29.50	1.08	---	---
Front	GPRS 3TX (body-worn)	L	29.28	29.50	1.05	---	---
		M	29.22	29.50	1.07	0.216	0.231
		H	29.16	29.50	1.08	---	---
Top	GPRS 3TX (hotspot)	L	29.28	29.50	1.05	---	---
		M	29.22	29.50	1.07	0.114	0.122
		H	29.16	29.50	1.08	---	---
Left	GPRS 3TX (hotspot)	L	29.28	29.50	1.05	---	---
		M	29.22	29.50	1.07	0.165	0.177
		H	29.16	29.50	1.08	---	---
Right	GPRS 3TX (hotspot)	L	29.28	29.50	1.05	---	---
		M	29.22	29.50	1.07	0.067	0.072
		H	29.16	29.50	1.08	---	---

**Mode: GSM1900(GPRS)**

fL (MHz)=1850.2MHz      fM (MHz)=1880.0MHz      fH (MHz)=1909.8MHz

SAR Values (1900MHz Band)

**Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek		L	26.24	26.50	1.06	---	---
		M	25.97	26.50	1.13	0.424	0.479
		H	25.29	26.50	1.32	---	---
Left Tilted		L	26.24	26.50	1.06	---	---
		M	25.97	26.50	1.13	0.612	0.692
		H	25.29	26.50	1.32	---	---
Right cheek	GPRS 3TX (head)	L1	26.24	26.50	1.06	0.832	0.882
		M1	25.97	26.50	1.13	<b>0.922</b>	<b>1.042</b>
		H1	25.29	26.50	1.32	0.783	1.034
		L2	26.24	26.50	1.06	0.831	0.882
		M2	25.97	26.50	1.13	0.920	1.039
		H2	25.29	26.50	1.32	0.784	1.036
Right Tilted		L	26.24	26.50	1.06	---	---
		M	25.97	26.50	1.13	0.717	0.810
		H	25.29	26.50	1.32	---	---
Back	GPRS 3TX (body-worn)	L	26.24	26.50	1.06	---	---
		M	25.97	26.50	1.13	0.178	0.201
		H	25.29	26.50	1.32	---	---
Front		L	26.24	26.50	1.06	---	---
		M	25.97	26.50	1.13	0.140	0.158
		H	25.29	26.50	1.32	---	---
Top		L	26.24	26.50	1.06	---	---
		M	25.97	26.50	1.13	<b>0.368</b>	<b>0.416</b>
		H	25.29	26.50	1.32	---	---
Left	GPRS 3TX (hotspot)	L	26.24	26.50	1.06	0.080	---
		M	25.97	26.50	1.13	---	0.090
		H	25.29	26.50	1.32	---	---
Right		L	26.24	26.50	1.06	0.300	---
		M	25.97	26.50	1.13	---	0.339
		H	25.29	26.50	1.32	0.080	---

**Mode: WCDMA BAND II**

fL (MHz)= 1852.4MHz      fM (MHz)= 1880.0MHz      fH (MHz)= 1907.6MHz

SAR Values (WCDMA BANDII)

**Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	12.2KRMC (head)	L	19.44	19.50	1.01	---	---
		M	19.48	19.50	1.00	0.584	0.584
		H	19.39	19.50	1.03	---	---
Left Tilted		L	19.44	19.50	1.01	---	---
		M	19.48	19.50	1.00	0.629	0.629
		H	19.39	19.50	1.03	---	---
Right cheek		L1	19.44	19.50	1.01	<b>0.971</b>	<b>0.981</b>
		M1	19.48	19.50	1.00	0.890	0.890
		H1	19.39	19.50	1.03	0.792	0.816
	L2	19.44	19.50	1.01	0.969	0.979	
	M2	19.48	19.50	1.00	0.862	0.862	
	H2	19.39	19.50	1.03	0.840	0.865	
Right Tilted	L	19.44	19.50	1.01	---	---	
	M	19.48	19.50	1.00	0.730	0.730	
	H	19.39	19.50	1.03	---	---	
Back	12.2KRMC (body-worn)	L	19.44	19.50	1.01	---	---
		M	19.48	19.50	1.00	0.429	0.429
		H	19.39	19.50	1.03	---	---
Front		L	19.44	19.50	1.01	---	---
		M	19.48	19.50	1.00	0.358	0.358
		H	19.39	19.50	1.03	---	---
Top	L	19.44	19.50	1.01	---	---	
	M	19.48	19.50	1.00	<b>0.563</b>	<b>0.563</b>	
	H	19.39	19.50	1.03	---	---	
Left	12.2KRMC (hotspot)	L	19.44	19.50	1.01	---	---
		M	19.48	19.50	1.00	0.185	0.185
		H	19.39	19.50	1.03	---	---
Right		L	19.44	19.50	1.01	---	---
		M	19.48	19.50	1.00	0.377	0.377
		H	19.39	19.50	1.03	---	---

**Mode: WCDMA BANDV**

fL (MHz)=826.4MHz      fM (MHz)=836.4MHz      fH (MHz)= 846.6MHz

SAR Values (WCDMA BANDV)

**Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	12.2KRMC (head)	L1	23.03	23.50	1.11	0.926	1.028
		M1	23.12	23.50	1.09	<b>0.958</b>	<b>1.044</b>
		H1	22.96	23.50	1.13	0.862	0.974
		L2	23.03	23.50	1.11	0.930	1.032
		M2	23.12	23.50	1.09	0.951	1.038
		H2	22.96	23.50	1.13	0.855	0.968
Left Tilted		L1	23.03	23.50	1.11	0.860	0.955
		M1	23.12	23.50	1.09	0.921	1.004
		H1	22.96	23.50	1.13	0.801	0.905
		L2	23.03	23.50	1.11	0.830	0.925
		M2	23.12	23.50	1.09	0.918	1.002
		H2	22.96	23.50	1.13	0.800	0.906
Right cheek	L1	23.03	23.50	1.11	0.883	0.980	
	M1	23.12	23.50	1.09	0.937	1.021	
	H1	22.96	23.50	1.13	0.803	0.907	
	L2	23.03	23.50	1.11	0.860	0.958	
	M2	23.12	23.50	1.09	0.932	1.017	
	H2	22.96	23.50	1.13	0.810	0.917	
Right Tilted	L1	23.03	23.50	1.11	0.770	0.855	
	M1	23.12	23.50	1.09	0.830	0.905	
	H1	22.96	23.50	1.13	0.720	0.814	
	L2	23.03	23.50	1.11	0.782	0.871	
	M2	23.12	23.50	1.09	0.824	0.899	
	H2	22.96	23.50	1.13	0.722	0.818	
Back	12.2KRMC (body-worn)	L	23.03	23.50	1.11	---	---
		M	23.12	23.50	1.09	<b>0.250</b>	<b>0.273</b>
		H	22.96	23.50	1.13	---	---
Front		L	23.03	23.50	1.11	---	---
		M	23.12	23.50	1.09	0.210	0.229
		H	22.96	23.50	1.13	---	---
Top	L	23.03	23.50	1.11	---	---	
	M	23.12	23.50	1.09	0.111	0.121	
	H	22.96	23.50	1.13	---	---	
Left	L	23.03	23.50	1.11	---	---	
	M	23.12	23.50	1.09	0.133	0.133	
	H	22.96	23.50	1.13	---	---	
Right	L	23.03	23.50	1.11	---	---	
	M	23.12	23.50	1.09	0.207	0.207	
	H	22.96	23.50	1.13	---	---	

**Mode: LTE Band 2**

fL (MHz)= 1860MHz

fM (MHz)= 1880MHz

fH (MHz)= 1900MHz

SAR Values (LTE BAND2)

**Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	20BW 1RB (head)	L	18.94	19.00	1.01	---	---
		M	18.98	19.00	1.00	0.483	0.483
		H	18.97	19.00	1.01	---	---
Left Tilted		L	18.94	19.00	1.01	---	---
		M	18.98	19.00	1.00	0.697	0.697
		H	18.97	19.00	1.01	---	---
Right cheek		L	18.94	19.00	1.01	---	---
		M	18.98	19.00	1.00	0.701	0.701
		H	18.97	19.00	1.01	---	---
Right Tilted	L	18.94	19.00	1.01	---	---	
	M	18.98	19.00	1.00	<b>0.742</b>	<b>0.742</b>	
	H	18.97	19.00	1.01	---	---	
Back	20BW 1RB (body-worn)	L	18.94	19.00	1.01	---	---
		M	18.98	19.00	1.00	0.322	0.322
		H	18.97	19.00	1.01	---	---
Front		L	18.94	19.00	1.01	---	---
		M	18.98	19.00	1.00	0.236	0.236
		H	18.97	19.00	1.01	---	---
Top		L	18.94	19.00	1.01	---	---
		M	18.98	19.00	1.00	<b>0.398</b>	<b>0.398</b>
		H	18.97	19.00	1.01	---	---
Left	20BW 1RB (hotspot)	L	18.94	19.00	1.01	---	---
		M	18.98	19.00	1.00	0.178	0.178
		H	18.97	19.00	1.01	---	---
Right		L	18.94	19.00	1.01	---	---
		M	18.98	19.00	1.00	0.074	0.074
		H	18.97	19.00	1.01	---	---

Left cheek	20BW 50%RB (head)	L	17.92	18.50	1.14	---	---
		M	18.00	18.50	1.12	0.528	0.591
		H	18.04	18.50	1.11	---	---
Left Tilted		L	17.92	18.50	1.14	---	---
		M	18.00	18.50	1.12	0.574	0.643
		H	18.04	18.50	1.11	---	---
Right cheek		L	17.92	18.50	1.14	---	---
		M	18.00	18.50	1.12	0.619	0.693
		H	18.04	18.50	1.11	---	---
Right Tilted	L	17.92	18.50	1.14	---	---	
	M	18.00	18.50	1.12	0.634	0.710	
	H	18.04	18.50	1.11	---	---	
Back	20BW 50%RB (body-worn)	L	17.92	18.50	1.14	---	---
		M	18.00	18.50	1.12	0.301	0.337
		H	18.04	18.50	1.11	---	---
Front		L	17.92	18.50	1.14	---	---
		M	18.00	18.50	1.12	0.218	0.244
		H	18.04	18.50	1.11	---	---



**Mode: LTE Band 4**

fL (MHz)= 1720MHz

fM (MHz)= 1732.5MHz

fH (MHz)= 1745MHz

SAR Values (LTE BAND4) **Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek		L	17.81	18.00	1.04	---	---
		M	17.86	18.00	1.03	0.702	0.723
		H	17.88	18.00	1.03	---	---
Left Tilted		L	17.81	18.00	1.04	---	---
		M	17.86	18.00	1.03	0.745	0.767
		H	17.88	18.00	1.03	---	---
Right cheek	20BW 1RB (head)	L1	17.81	18.00	1.04	0.941	0.979
		M1	17.86	18.00	1.03	1.020	1.051
		H1	17.88	18.00	1.03	0.846	0.871
		L2	17.81	18.00	1.04	0.923	0.964
		M2	17.86	18.00	1.03	1.000	1.033
		H2	17.88	18.00	1.03	0.841	0.865
Right Tilted		L1	17.81	18.00	1.04	<b>1.150</b>	<b>1.196</b>
		M1	17.86	18.00	1.03	1.150	1.185
		H1	17.88	18.00	1.03	1.100	1.133
		L2	17.81	18.00	1.04	1.120	1.170
		M2	17.86	18.00	1.03	1.130	1.167
		H2	17.88	18.00	1.03	1.070	1.100
Back	20BW 1RB (body-worn)	L	17.81	18.00	1.04	---	---
		M	17.86	18.00	1.03	0.320	0.330
		H	17.88	18.00	1.03	---	---
Front		L	17.81	18.00	1.04	---	---
		M	17.86	18.00	1.03	0.300	0.309
		H	17.88	18.00	1.03	---	---
Top		L	17.81	18.00	1.04	---	---
		M	17.86	18.00	1.03	<b>0.334</b>	<b>0.344</b>
		H	17.88	18.00	1.03	---	---
Left	20BW 1RB (hotspot)	L	17.81	18.00	1.04	---	---
		M	17.86	18.00	1.03	0.148	0.152
		H	17.88	18.00	1.03	---	---
Right		L	17.81	18.00	1.04	---	---
		M	17.86	18.00	1.03	0.100	0.103
		H	17.88	18.00	1.03	---	---

Left cheek	20BW 50%RB (head)	L	16.66	17.00	1.08	---	---	
		M	16.64	17.00	1.09	0.557	0.607	
		H	16.66	17.00	1.08	---	---	
Left Tilted		L	16.66	17.00	1.08	---	---	
		M	16.64	17.00	1.09	0.581	0.633	
		H	16.66	17.00	1.08	---	---	
Right cheek		L	16.66	17.00	1.08	---	---	
		M	16.64	17.00	1.09	0.701	0.764	
		H	16.66	17.00	1.08	---	---	
Right Tilted	L	16.66	17.00	1.08	---	---		
	M	16.64	17.00	1.09	0.728	0.794		
	H	16.66	17.00	1.08	---	---		
Back	20BW 50%RB (body-worn)	L	16.66	17.00	1.08	---	---	
		M	16.64	17.00	1.09	0.212	0.231	
		H	16.66	17.00	1.08	---	---	
Front		L	16.66	17.00	1.08	---	---	
		M	16.64	17.00	1.09	0.209	0.228	
		H	16.66	17.00	1.08	---	---	
Left cheek		20BW 100%RB (head)	L	16.61	17.00	1.09	---	---
			M	16.61	17.00	1.09	0.673	0.734
			H	16.63	17.00	1.09	---	---
Left Tilted	L		16.61	17.00	1.09	---	---	
	M		16.61	17.00	1.09	0.702	0.765	
	H		16.63	17.00	1.09	---	---	

**Mode: LTE Band 5**

fL (MHz)=829 MHz      fM (MHz)=836.5MHz      fH (MHz)= 844MHz

SAR Values (LTE BAND5)

**Limit of SAR (W/kg) : <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	10BW 1RB (head)	L1	22.33	22.50	1.04	0.769	0.800
		M1	22.39	22.50	1.03	0.813	0.837
		H1	22.29	22.50	1.05	<b>0.892</b>	<b>0.937</b>
		L2	22.33	22.50	1.04	0.750	0.780
		M2	22.39	22.50	1.03	0.811	0.832
		H2	22.29	22.50	1.05	0.885	0.929
Left Tilted	10BW 1RB (head)	L	22.33	22.50	1.04	---	---
		M	22.39	22.50	1.03	0.720	0.742
		H	22.29	22.50	1.05	---	---
Right cheek	10BW 1RB (head)	L	22.33	22.50	1.04	---	---
		M	22.39	22.50	1.03	0.745	0.767
		H	22.29	22.50	1.05	---	---
Right Tilted	10BW 1RB (head)	L	22.33	22.50	1.04	---	---
		M	22.39	22.50	1.03	0.625	0.644
		H	22.29	22.50	1.05	---	---
Back	10BW 1RB (body-worn)	L	22.33	22.50	1.04	---	---
		M	22.39	22.50	1.03	<b>0.163</b>	<b>0.168</b>
		H	22.29	22.50	1.05	---	---
Front	10BW 1RB (body-worn)	L	22.33	22.50	1.04	---	---
		M	22.39	22.50	1.03	0.118	0.122
		H	22.29	22.50	1.05	---	---
Top	10BW 1RB (hotspot)	L	22.33	22.50	1.04	---	---
		M	22.39	22.50	1.03	0.084	0.086
		H	22.29	22.50	1.05	---	---
Left	10BW 1RB (hotspot)	L	22.33	22.50	1.04	---	---
		M	22.39	22.50	1.03	0.021	0.022
		H	22.29	22.50	1.05	---	---
Right	10BW 1RB (hotspot)	L	22.33	22.50	1.04	---	---
		M	22.39	22.50	1.03	0.062	0.064
		H	22.29	22.50	1.05	---	---

Left cheek	10BW 50%RB (head)	L	21.58	22.00	1.10	0.660	0.726
		M1	21.32	22.00	1.17	0.722	0.845
		H1	21.63	22.00	1.09	0.791	0.862
		M2	21.32	22.00	1.17	0.721	0.843
		H2	21.63	22.00	1.09	0.790	0.860
Left Tilted		L	21.58	22.00	1.10	---	---
		M	21.32	22.00	1.17	0.650	0.761
		H	21.63	22.00	1.09	---	---
Right cheek		L	21.58	22.00	1.10	---	---
		M	21.32	22.00	1.17	0.629	0.736
		H	21.63	22.00	1.09	---	---
Right Tilted		L	21.58	22.00	1.10	---	---
		M	21.32	22.00	1.17	0.608	0.711
		H	21.63	22.00	1.09	---	---
Back		10BW 50%RB (body-worn)	L	21.58	22.00	1.10	---
	M		21.32	22.00	1.17	0.132	0.154
	H		21.63	22.00	1.09	---	---
Front	L		21.58	22.00	1.10	---	---
	M		21.32	22.00	1.17	0.104	0.122
	H		21.63	22.00	1.09	---	---
Left cheek	10BW 100%RB (head)	L	21.54	22.00	1.11	---	---
		M	21.25	22.00	1.19	0.635	0.756
		H	21.35	22.00	1.16	---	---
Left Tilted		L	21.54	22.00	1.11	---	---
		M	21.25	22.00	1.19	0.618	0.735
		H	21.35	22.00	1.16	---	---

**Mode: LTE Band 7**

fL (MHz)= 2510MHz

fM (MHz)= 2535MHz

fH (MHz)= 2560MHz

SAR Values (LTE BAND7)

**Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	20BW 1RB (head)	L	18.27	18.50	1.05	---	---
		M	18.14	18.50	1.09	0.529	0.577
		H	18.07	18.50	1.10	---	---
Left Tilted		L	18.27	18.50	1.05	---	---
		M	18.14	18.50	1.09	0.567	0.618
		H	18.07	18.50	1.10	---	---
Right cheek		L	18.27	18.50	1.05	---	---
		M	18.14	18.50	1.09	0.721	0.786
		H	18.07	18.50	1.10	---	---
Right Tilted	L1	18.27	18.50	1.05	0.950	0.998	
	M1	18.14	18.50	1.09	<b>1.070</b>	<b>1.166</b>	
	H1	18.07	18.50	1.10	0.923	1.015	
	L2	18.27	18.50	1.05	0.931	0.982	
	M2	18.14	18.50	1.09	0.988	1.073	
	H2	18.07	18.50	1.10	0.917	1.012	
Back	20BW 1RB (body-worn)	L	18.27	18.50	1.05	---	---
		M	18.14	18.50	1.09	0.384	0.419
		H	18.07	18.50	1.10	---	---
Front		L	18.27	18.50	1.05	---	---
		M	18.14	18.50	1.09	0.265	0.289
		H	18.07	18.50	1.10	---	---
Top		L	18.27	18.50	1.05	---	---
		M	18.14	18.50	1.09	<b>0.482</b>	<b>0.525</b>
		H	18.07	18.50	1.10	---	---
Left	20BW 1RB (hotspot)	L	18.27	18.50	1.05	---	---
		M	18.14	18.50	1.09	0.147	0.160
		H	18.07	18.50	1.10	---	---
Right		L	18.27	18.50	1.05	---	---
		M	18.14	18.50	1.09	0.076	0.083
		H	18.07	18.50	1.10	---	---

Left cheek	20BW 50%RB (head)	L	17.49	17.50	1.00	---	---
		M	17.21	17.50	1.07	0.432	0.462
		H	17.26	17.50	1.06	---	---
Left Tilted		L	17.49	17.50	1.00	---	---
		M	17.21	17.50	1.07	0.486	0.520
		H	17.26	17.50	1.06	---	---
Right cheek		L	17.49	17.50	1.00	---	---
		M	17.21	17.50	1.07	0.629	0.673
		H	17.26	17.50	1.06	---	---
Right Tilted	L	17.49	17.50	1.00	---	---	
	M	17.21	17.50	1.07	0.718	0.768	
	H	17.26	17.50	1.06	---	---	
Back	20BW 50%RB (body-worn)	L	17.49	17.50	1.00	---	---
		M	17.21	17.50	1.07	0.261	0.279
		H	17.26	17.50	1.06	---	---
Front		L	17.49	17.50	1.00	---	---
		M	17.21	17.50	1.07	0.125	0.134
		H	17.26	17.50	1.06	---	---
Right Tilted		L	17.43	17.50	1.02	---	---
		M	17.28	17.50	1.05	0.706	0.741
		H	17.19	17.50	1.07	---	---

**Mode: LTE Band 12**

fL (MHz)=704 MHz      fM (MHz)=707.5MHz      fH (MHz)= 711MHz

SAR Values (LTE BAND12)

**Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	position					1g Average	1g Average
Left cheek	10BW 1RB (head)	L1	19.82	20.50	1.17	0.820	0.959
		M1	20.05	20.50	1.11	<b>0.903</b>	<b>1.002</b>
		H1	20.12	20.50	1.09	0.769	0.838
		L2	19.82	20.50	1.17	0.817	0.955
		M2	20.05	20.50	1.11	0.900	0.998
		H2	20.12	20.50	1.09	0.782	0.854
Left Tilted	10BW 1RB (head)	L1	19.82	20.50	1.17	0.729	0.853
		M1	20.05	20.50	1.11	0.843	0.936
		H1	20.12	20.50	1.09	0.686	0.748
		M2	20.05	20.50	1.11	0.844	0.936
Right cheek	10BW 1RB (head)	L	19.82	20.50	1.17	---	---
		M	20.05	20.50	1.11	0.638	0.708
		H	20.12	20.50	1.09	---	---
Right Tilted	10BW 1RB (head)	L	19.82	20.50	1.17	---	---
		M	20.05	20.50	1.11	0.581	0.645
		H	20.12	20.50	1.09	---	---
Back	10BW 1RB (body-worn)	L	19.82	20.50	1.17	---	---
		M	20.05	20.50	1.11	0.112	0.124
		H	20.12	20.50	1.09	---	---
Front		L	19.82	20.50	1.17	---	---
		M	20.05	20.50	1.11	<b>0.144</b>	<b>0.160</b>
		H	20.12	20.50	1.09	---	---
Top	10BW 1RB (body-worn)	L	19.82	20.50	1.17	---	---
		M	20.05	20.50	1.11	0.106	0.118
		H	20.12	20.50	1.09	---	---
Left	10BW 1RB (hotspot)	L	19.82	20.50	1.17	---	---
		M	20.05	20.50	1.11	0.068	0.075
		H	20.12	20.50	1.09	---	---
Right		L	19.82	20.50	1.17	---	---
		M	20.05	20.50	1.11	0.075	0.083
		H	20.12	20.50	1.09	---	---

Left cheek	10BW 50%RB (head)	L	19.17	19.50	1.08	---	---	
		M	19.22	19.50	1.07	0.694	0.743	
		H	19.17	19.50	1.08	---	---	
Left Tilted		L	19.17	19.50	1.08	---	---	
		M	19.22	19.50	1.07	0.613	0.656	
		H	19.17	19.50	1.08	---	---	
Right cheek		L	19.17	19.50	1.08	---	---	
		M	19.22	19.50	1.07	0.480	0.514	
		H	19.17	19.50	1.08	---	---	
Right Tilted		L	19.17	19.50	1.08	---	---	
		M	19.22	19.50	1.07	0.408	0.437	
		H	19.17	19.50	1.08	---	---	
Back	10BW 50%RB (body-worn)	L	19.17	19.50	1.08	---	---	
		M	19.22	19.50	1.07	0.073	0.078	
		H	19.17	19.50	1.08	---	---	
Front		L	19.17	19.50	1.08	---	---	
		M	19.22	19.50	1.07	0.102	0.109	
		H	19.17	19.50	1.08	---	---	
Left cheek		10BW 100%RB (head)	L	19.04	19.50	1.11	---	---
			M	19.11	19.50	1.09	0.659	0.718
			H	19.06	19.50	1.11	---	---
Left Tilted			L	19.04	19.50	1.11	---	---
			M	19.11	19.50	1.09	0.621	0.677
			H	19.06	19.50	1.11	---	---



**Mode: LTE Band 13**

fL (MHz)=782 MHz fM (MHz)= 782MHz fH (MHz)= 782MHz

SAR Values (LTE BAND13)

**Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	position					1g Average	1g Average
Left cheek	10BW 1RB (head)	L	23.93	24.00	1.02	---	---
		M	23.93	24.00	1.02	<b>0.622</b>	<b>0.634</b>
		H	23.93	24.00	1.02	---	---
Left Tilted		L	23.93	24.00	1.02	---	---
		M	23.93	24.00	1.02	0.465	0.474
		H	23.93	24.00	1.02	---	---
Right cheek		L	23.93	24.00	1.02	---	---
		M	23.93	24.00	1.02	0.599	0.611
		H	23.93	24.00	1.02	---	---
Right Tilted	L	23.93	24.00	1.02	---	---	
	M	23.93	24.00	1.02	0.521	0.531	
	H	23.93	24.00	1.02	---	---	
Back	10BW 1RB (body-worn)	L	23.93	24.00	1.02	---	---
		M	23.93	24.00	1.02	0.154	0.157
		H	23.93	24.00	1.02	---	---
Front		L	23.93	24.00	1.02	---	---
		M	23.93	24.00	1.02	<b>0.158</b>	<b>0.161</b>
		H	23.93	24.00	1.02	---	---
Top		L	23.93	24.00	1.02	---	---
		M	23.93	24.00	1.02	0.120	0.122
		H	23.93	24.00	1.02	---	---
Left	10BW 1RB (hotspot)	L	23.93	24.00	1.02	---	---
		M	23.93	24.00	1.02	0.017	0.017
		H	23.93	24.00	1.02	---	---
Right		L	23.93	24.00	1.02	---	---
		M	23.93	24.00	1.02	0.090	0.092
		H	23.93	24.00	1.02	---	---

Left cheek	10BW 50%RB (head)	L	23.23	23.50	1.06	---	---
		M	23.23	23.50	1.06	0.619	0.656
		H	23.23	23.50	1.06	---	---
Left Tilted		L	23.23	23.50	1.06	---	---
		M	23.23	23.50	1.06	0.358	0.379
		H	23.23	23.50	1.06	---	---
Right cheek		L	23.23	23.50	1.06	---	---
		M	23.23	23.50	1.06	0.501	0.531
		H	23.23	23.50	1.06	---	---
Right Tilted	L	23.23	23.50	1.06	---	---	
	M	23.23	23.50	1.06	0.460	0.488	
	H	23.23	23.50	1.06	---	---	
Back	10BW 50%RB (body-worn)	L	23.23	23.50	1.06	---	---
		M	23.23	23.50	1.06	0.072	0.076
		H	23.23	23.50	1.06	---	---
Front		L	23.23	23.50	1.06	---	---
		M	23.23	23.50	1.06	0.081	0.086
		H	23.23	23.50	1.06	---	---

**Mode: LTE Band 66**

fL (MHz)=1720 MHz

fM (MHz)=1745MHz

fH (MHz)= 1770MHz

SAR Values (LTE BAND66)

**Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	position					1g Average	1g Average
Left cheek		L	17.94	18.00	1.01	---	---
		M	17.99	18.00	1.00	0.568	0.568
		H	17.97	18.00	1.01	---	---
Left Tilted		L	17.94	18.00	1.01	---	---
		M	17.99	18.00	1.00	0.707	0.707
		H	17.97	18.00	1.01	---	---
Right cheek	20BW 1RB (head)	L1	17.94	18.00	1.01	1.030	1.040
		M1	17.99	18.00	1.00	<b>1.080</b>	<b>1.080</b>
		H1	17.97	18.00	1.01	0.990	1.000
		L2	17.94	18.00	1.01	1.040	1.054
		M2	17.99	18.00	1.00	0.995	0.997
		H2	17.97	18.00	1.01	0.960	0.967
Right Tilted		L	17.94	18.00	1.01	---	---
		M	17.99	18.00	1.00	0.720	0.720
		H	17.97	18.00	1.01	---	---
Back	20BW 1RB (body-worn)	L	17.94	18.00	1.01	---	---
		M	17.99	18.00	1.00	0.282	0.282
		H	17.97	18.00	1.01	---	---
Front		L	17.94	18.00	1.01	---	---
		M	17.99	18.00	1.00	0.274	0.274
		H	17.97	18.00	1.01	---	---
Top		L	17.94	18.00	1.01	---	---
		M	17.99	18.00	1.00	<b>0.350</b>	<b>0.350</b>
		H	17.97	18.00	1.01	---	---
Left	20BW 1RB (hotspot)	L	17.94	18.00	1.01	---	---
		M	17.99	18.00	1.00	0.244	0.244
		H	17.97	18.00	1.01	---	---
Right		L	17.94	18.00	1.01	---	---
		M	17.99	18.00	1.00	0.080	0.080
		H	17.97	18.00	1.01	---	---

Left cheek	20BW 50%RB (head)	L	17.06	17.50	1.11	---	---	
		M	17.11	17.50	1.09	0.408	0.445	
		H	17.07	17.50	1.10	---	---	
Left Tilted		L	17.06	17.50	1.11	---	---	
		M	17.11	17.50	1.09	0.540	0.589	
		H	17.07	17.50	1.10	---	---	
Right cheek		L	17.06	17.50	1.11	---	---	
		M	17.11	17.50	1.09	0.720	0.785	
		H	17.07	17.50	1.10	---	---	
Right Tilted	L	17.06	17.50	1.11	---	---		
	M	17.11	17.50	1.09	0.632	0.689		
	H	17.07	17.50	1.10	---	---		
Back	20BW 50%RB (body-worn)	L	17.06	17.50	1.11	---	---	
		M	17.11	17.50	1.09	0.115	0.125	
		H	17.07	17.50	1.10	---	---	
Front		L	17.06	17.50	1.11	---	---	
		M	17.11	17.50	1.09	0.106	0.116	
		H	17.07	17.50	1.10	---	---	
Right cheek		20BW 100%RB (head)	L	17.00	17.50	1.12	---	---
			M	17.08	17.50	1.10	0.709	0.780
			H	17.04	17.50	1.11	---	---

**Mode: Bluetooth**

fL (MHz)=2402MHz      fM (MHz)=2441MHz      fH (MHz)= 2480MHz

SAR Values (Wi-Fi 802.11b)

Limit of SAR (W/kg): <1.6W/kg (1g Average)

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	802.11b (head)	L	8.12	9.00	1.22	---	---
		M	8.55	9.00	1.11	0.004	0.004
		H	8.63	9.00	1.09	---	---
Left Tilted		L	8.12	9.00	1.22	---	---
		M	8.55	9.00	1.11	0.005	0.006
		H	8.63	9.00	1.09	---	---
Right cheek		L	8.12	9.00	1.22	---	---
		M	8.55	9.00	1.11	0.004	0.004
		H	8.63	9.00	1.09	---	---
Right Tilted	L	8.12	9.00	1.22	---	---	
	M	8.55	9.00	1.11	0.003	0.003	
	H	8.63	9.00	1.09	---	---	
Back	802.11b (body- worn)	L	8.12	9.00	1.22	---	---
		M	8.55	9.00	1.11	0.004	0.004
		H	8.63	9.00	1.09	---	---
Front		L	8.12	9.00	1.22	---	---
		M	8.55	9.00	1.11	0.003	0.003
		H	8.63	9.00	1.09	---	---

**Mode: Wi-Fi 2.4GHz ANT1**

fL (MHz)=2412MHz fM (MHz)=2437MHz

fH (MHz)= 2462MHz

SAR Values (Wi-Fi 802.11b)

Limit of SAR (W/kg): <1.6W/kg (1g Average)

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	802.11b (head)	L	15.92	16.50	1.14	---	---
		M	16.01	16.50	1.12	0.489	0.548
		H	15.96	16.50	1.13	---	---
Left Tilted		L	15.92	16.50	1.14	---	---
		M	16.01	16.50	1.12	0.141	0.158
		H	15.96	16.50	1.13	---	---
Right cheek		L	15.92	16.50	1.14	---	---
		M	16.01	16.50	1.12	<b>1.060</b>	<b>1.187</b>
		H	15.96	16.50	1.13	---	---
Right Tilted	L	15.92	16.50	1.14	---	---	
	M	16.01	16.50	1.12	0.435	0.487	
	H	15.96	16.50	1.13	---	---	
Back	802.11b (body- worn)	L	15.92	16.50	1.14	---	---
		M	16.01	16.50	1.12	0.262	0.293
		H	15.96	16.50	1.13	---	---
Front		L	15.92	16.50	1.14	---	---
		M	16.01	16.50	1.12	0.147	0.165
		H	15.96	16.50	1.13	---	---
Top	L	15.92	16.50	1.14	---	---	
	M	16.01	16.50	1.12	0.120	0.134	
	H	15.96	16.50	1.13	---	---	
Left	802.11b (hotspot)	L	15.92	16.50	1.14	---	---
		M	16.01	16.50	1.12	<b>0.516</b>	<b>0.578</b>
		H	15.96	16.50	1.13	---	---
Right		L	15.92	16.50	1.14	---	---
		M	16.01	16.50	1.12	0.112	0.125
		H	15.96	16.50	1.13	---	---

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	802.11b (head)	L	13.48	13.50	1.00	---	---
		M	13.45	13.50	1.01	0.250	0.253
		H	13.40	13.50	1.02	---	---
Left Tilted		L	13.48	13.50	1.00	---	---
		M	13.45	13.50	1.01	0.102	0.103
		H	13.40	13.50	1.02	---	---
Right cheek		L	13.48	13.50	1.00	---	---
		M	13.45	13.50	1.01	0.461	0.466
		H	13.40	13.50	1.02	---	---
Right Tilted	L	13.48	13.50	1.00	---	---	
	M	13.45	13.50	1.01	0.092	0.093	
	H	13.40	13.50	1.02	---	---	

**\*Note: There is the power reduction of Wi-Fi 2.4GHz is activated when simultaneous transmission for GSM/WCDMA/LTE Antenna and Wi-Fi 2.4GHz Antenna (calling mode-head position)**

**Mode: Wi-Fi 2.4GHz ANT2**

fL (MHz)=2412MHz fM (MHz)=2437MHz

fH (MHz)= 2462MHz

SAR Values (Wi-Fi 802.11b)

Limit of SAR (W/kg): <1.6W/kg (1g Average)

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	802.11b (head)	L	16.05	16.50	1.11	---	---
		M	16.11	16.50	1.09	0.522	0.569
		H	16.08	16.50	1.10	---	---
Left Tilted		L	16.05	16.50	1.11	---	---
		M	16.11	16.50	1.09	0.419	0.457
		H	16.08	16.50	1.10	---	---
Right cheek		L	16.05	16.50	1.11	---	---
		M	16.11	16.50	1.09	0.463	0.505
		H	16.08	16.50	1.10	---	---
Right Tilted		L	16.05	16.50	1.11	---	---
		M	16.11	16.50	1.09	0.345	0.376
		H	16.08	16.50	1.10	---	---
Back	802.11b (body- worn)	L	16.05	16.50	1.11	---	---
		M	16.11	16.50	1.09	0.254	0.277
		H	16.08	16.50	1.10	---	---
Front		L	16.05	16.50	1.11	---	---
		M	16.11	16.50	1.09	0.143	0.156
		H	16.08	16.50	1.10	---	---
Top	L	16.05	16.50	1.11	---	---	
	M	16.11	16.50	1.09	0.124	0.135	
	H	16.08	16.50	1.10	---	---	
Left	802.11b (hotspot)	L	16.05	16.50	1.11	---	---
		M	16.11	16.50	1.09	0.113	0.123
		H	16.08	16.50	1.10	---	---
Right		L	16.05	16.50	1.11	---	---
		M	16.11	16.50	1.09	0.103	0.112
		H	16.08	16.50	1.10	---	---



Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	802.11b (head)	L	13.92	14.00	1.02	---	---
		M	13.86	14.00	1.03	0.369	0.380
		H	13.77	14.00	1.05	---	---
Left Tilted		L	13.92	14.00	1.02	---	---
		M	13.86	14.00	1.03	0.274	0.282
		H	13.77	14.00	1.05	---	---
Right cheek		L	13.92	14.00	1.02	---	---
		M	13.86	14.00	1.03	0.177	0.182
		H	13.77	14.00	1.05	---	---
Right Tilted	L	13.92	14.00	1.02	---	---	
	M	13.86	14.00	1.03	0.101	0.104	
	H	13.77	14.00	1.05	---	---	

**\*Note: There is the power reduction of Wi-Fi 2.4GHz is activated when simultaneous transmission for GSM/WCDMA/LTE Antenna and Wi-Fi 2.4GHz Antenna (calling mode-head position)**

**Mode: Wi-Fi 2.4GHz MIMO**

fL (MHz)=2412MHz fM (MHz)=2437MHz fH (MHz)= 2462MHz

SAR Values (Wi-Fi 802.11 n HT20)

Limit of SAR (W/kg): <1.6W/kg (1g Average)

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	802. 11n HT20 (head)	L	17.78	18.00	1.05	---	---
		M	17.82	18.00	1.04	0.274	0.285
		H	17.88	18.00	1.03	---	---
Left Tilted		L	17.78	18.00	1.05	---	---
		M	17.82	18.00	1.04	0.234	0.243
		H	17.88	18.00	1.03	---	---
Right cheek		L	17.78	18.00	1.05	---	---
		M	17.82	18.00	1.04	0.473	0.492
		H	17.88	18.00	1.03	---	---
Right Tilted		L	17.78	18.00	1.05	---	---
		M	17.82	18.00	1.04	0.249	0.259
		H	17.88	18.00	1.03	---	---
Back	802. 11n HT20 (body- worn)	L	17.78	18.00	1.05	---	---
		M	17.82	18.00	1.04	0.214	0.223
		H	17.88	18.00	1.03	---	---
Front		L	17.78	18.00	1.05	---	---
		M	17.82	18.00	1.04	0.201	0.209
		H	17.88	18.00	1.03	---	---
Top	L	17.78	18.00	1.05	---	---	
	M	17.82	18.00	1.04	0.173	0.180	
	H	17.88	18.00	1.03	---	---	
Left	802. 11n HT20 (hotspot)	L	17.78	18.00	1.05	---	---
		M	17.82	18.00	1.04	0.285	0.296
		H	17.88	18.00	1.03	---	---
Right		L	17.78	18.00	1.05	---	---
		M	17.82	18.00	1.04	0.103	0.107
		H	17.88	18.00	1.03	---	---

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	802. 11n HT20 (head)	L	16.15	16.50	1.08	---	---
		M	16.06	16.50	1.11	0.139	0.154
		H	16.00	16.50	1.12	---	---
Left Tilted		L	16.15	16.50	1.08	---	---
		M	16.06	16.50	1.11	0.112	0.124
		H	16.00	16.50	1.12	---	---
Right cheek		L	16.15	16.50	1.08	---	---
		M	16.06	16.50	1.11	0.363	0.403
		H	16.00	16.50	1.12	---	---
Right Tilted	L	16.15	16.50	1.08	---	---	
	M	16.06	16.50	1.11	0.128	0.142	
	H	16.00	16.50	1.12	---	---	

**\*Note: There is the power reduction of Wi-Fi 2.4GHz is activated when simultaneous transmission for GSM/WCDMA/LTE Antenna and Wi-Fi 2.4GHz Antenna (calling mode-head position)**

**Mode: WIFI UNII-1 ANT1**

fL (MHz)=5180MHz fM (MHz)=5200MHz

fH (MHz)= 5240MHz

SAR Values (Wi-Fi 802.11a)

Limit of SAR (W/kg): <1.6W/kg (1g Average)

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	802.11a (head)	L	15.46	16.00	1.13	---	---
		M	15.53	16.00	1.11	0.067	0.074
		H	15.49	16.00	1.12	---	---
Left Tilted		L	15.46	16.00	1.13	---	---
		M	15.53	16.00	1.11	0.081	0.090
		H	15.49	16.00	1.12	---	---
Right cheek		L	15.46	16.00	1.13	---	---
		M	15.53	16.00	1.11	0.128	0.142
		H	15.49	16.00	1.12	---	---
Right Tilted	L	15.46	16.00	1.13	---	---	
	M	15.53	16.00	1.11	0.274	0.304	
	H	15.49	16.00	1.12	---	---	
Back	802.11a (body- worn)	L	15.46	16.00	1.13	---	---
		M	15.53	16.00	1.11	0.113	0.125
		H	15.49	16.00	1.12	---	---
Front		L	15.46	16.00	1.13	---	---
		M	15.53	16.00	1.11	0.046	0.051
		H	15.49	16.00	1.12	---	---
Top	L	15.46	16.00	1.13	---	---	
	M	15.53	16.00	1.11	0.134	0.149	
	H	15.49	16.00	1.12	---	---	
Left	802.11a (hotspot)	L	15.46	16.00	1.13	---	---
		M	15.53	16.00	1.11	<b>0.174</b>	<b>0.193</b>
		H	15.49	16.00	1.12	---	---
Right		L	15.46	16.00	1.13	---	---
		M	15.53	16.00	1.11	0.003	0.003
		H	15.49	16.00	1.12	---	---

**Mode: WIFI UNII-1 ANT2**

fL (MHz)=5180MHz fM (MHz)=5200MHz

fH (MHz)= 5240MHz

SAR Values (Wi-Fi 802.11a)

Limit of SAR (W/kg): <1.6W/kg (1g Average)

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	802.11a (head)	L	15.78	16.00	1.05	---	---
		M	15.88	16.00	1.03	0.104	0.107
		H	15.73	16.00	1.06	---	---
Left Tilted		L	15.78	16.00	1.05	---	---
		M	15.88	16.00	1.03	0.117	0.121
		H	15.73	16.00	1.06	---	---
Right cheek		L	15.78	16.00	1.05	---	---
		M	15.88	16.00	1.03	0.078	0.080
		H	15.73	16.00	1.06	---	---
Right Tilted		L	15.78	16.00	1.05	---	---
		M	15.88	16.00	1.03	0.079	0.081
		H	15.73	16.00	1.06	---	---
Back	802.11a (body- worn)	L	15.78	16.00	1.05	---	---
		M	15.88	16.00	1.03	0.056	0.058
		H	15.73	16.00	1.06	---	---
Front		L	15.78	16.00	1.05	---	---
		M	15.88	16.00	1.03	0.012	0.012
		H	15.73	16.00	1.06	---	---
Top	L	15.78	16.00	1.05	---	---	
	M	15.88	16.00	1.03	0.034	0.035	
	H	15.73	16.00	1.06	---	---	
Left	802.11a (hotspot)	L	15.78	16.00	1.05	---	---
		M	15.88	16.00	1.03	0.002	0.002
		H	15.73	16.00	1.06	---	---
Right		L	15.78	16.00	1.05	---	---
		M	15.88	16.00	1.03	0.041	0.042
		H	15.73	16.00	1.06	---	---

**Mode: WIFI UNII-1 MIMO**

fL (MHz)=5180MHz fM (MHz)=5200MHz fH (MHz)= 5240MHz

SAR Values (Wi-Fi 802.11 n HT20)

Limit of SAR (W/kg): <1.6W/kg (1g Average)

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	802. 11n HT20 (head)	L	17.64	18.00	1.09	---	---
		M	17.68	18.00	1.08	0.130	0.140
		H	17.62	18.00	1.09	---	---
Left Tilted		L	17.64	18.00	1.09	---	---
		M	17.68	18.00	1.08	0.152	0.164
		H	17.62	18.00	1.09	---	---
Right cheek		L	17.64	18.00	1.09	---	---
		M	17.68	18.00	1.08	0.224	0.242
		H	17.62	18.00	1.09	---	---
Right Tilted	L	17.64	18.00	1.09	---	---	
	M	17.68	18.00	1.08	<b>0.331</b>	<b>0.357</b>	
	H	17.62	18.00	1.09	---	---	
Back	802. 11n HT20 (body- worn)	L	17.64	18.00	1.09	---	---
		M	17.68	18.00	1.08	0.141	0.152
		H	17.62	18.00	1.09	---	---
Front		L	17.64	18.00	1.09	---	---
		M	17.68	18.00	1.08	0.039	0.042
		H	17.62	18.00	1.09	---	---
Top	L	17.64	18.00	1.09	---	---	
	M	17.68	18.00	1.08	0.108	0.117	
	H	17.62	18.00	1.09	---	---	
Left	802. 11n HT20 (hotspot)	L	17.64	18.00	1.09	---	---
		M	17.68	18.00	1.08	0.177	0.191
		H	17.62	18.00	1.09	---	---
Right		L	17.64	18.00	1.09	---	---
		M	17.68	18.00	1.08	0.034	0.037
		H	17.62	18.00	1.09	---	---

**Mode: WIFI UNII-3 ANT1**

fL (MHz)=5745MHz fM (MHz)=5785MHz

fH (MHz)= 5825MHz

SAR Values (Wi-Fi 802.11a)

Limit of SAR (W/kg): <1.6W/kg (1g Average)

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	802.11a (head)	L	13.81	14.00	1.04	---	---
		M	13.88	14.00	1.03	0.129	0.133
		H	13.97	14.00	1.01	---	---
Left Tilted		L	13.81	14.00	1.04	---	---
		M	13.88	14.00	1.03	0.218	0.225
		H	13.97	14.00	1.01	---	---
Right cheek		L	13.81	14.00	1.04	---	---
		M	13.88	14.00	1.03	0.387	0.399
		H	13.97	14.00	1.01	---	---
Right Tilted	L	13.81	14.00	1.04	---	---	
	M	13.88	14.00	1.03	0.253	0.261	
	H	13.97	14.00	1.01	---	---	
Back	802.11a (body- worn)	L	13.81	14.00	1.04	---	---
		M	13.88	14.00	1.03	<b>0.203</b>	<b>0.209</b>
		H	13.97	14.00	1.01	---	---
Front		L	13.81	14.00	1.04	---	---
		M	13.88	14.00	1.03	0.149	0.153
		H	13.97	14.00	1.01	---	---
Top	L	13.81	14.00	1.04	---	---	
	M	13.88	14.00	1.03	0.075	0.077	
	H	13.97	14.00	1.01	---	---	
Left	802.11a (hotspot)	L	13.81	14.00	1.04	---	---
		M	13.88	14.00	1.03	0.114	0.117
		H	13.97	14.00	1.01	---	---
Right		L	13.81	14.00	1.04	---	---
		M	13.88	14.00	1.03	0.005	0.005
		H	13.97	14.00	1.01	---	---

**Mode: WIFI UNII-3 ANT2**

fL (MHz)=5745MHz fM (MHz)=5785MHz fH (MHz)= 5825MHz

SAR Values (Wi-Fi 802.11a)

Limit of SAR (W/kg): <1.6W/kg (1g Average)

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	802.11a (head)	L	14.17	14.50	1.08	---	---
		M	14.28	14.50	1.05	0.002	0.002
		H	14.34	14.50	1.04	---	---
Left Tilted		L	14.17	14.50	1.08	---	---
		M	14.28	14.50	1.05	0.003	0.003
		H	14.34	14.50	1.04	---	---
Right cheek		L	14.17	14.50	1.08	---	---
		M	14.28	14.50	1.05	0.011	0.012
		H	14.34	14.50	1.04	---	---
Right Tilted	L	14.17	14.50	1.08	---	---	
	M	14.28	14.50	1.05	0.003	0.003	
	H	14.34	14.50	1.04	---	---	
Back	802.11a (body- worn)	L	14.17	14.50	1.08	---	---
		M	14.28	14.50	1.05	0.177	0.186
		H	14.34	14.50	1.04	---	---
Front		L	14.17	14.50	1.08	---	---
		M	14.28	14.50	1.05	0.002	0.002
		H	14.34	14.50	1.04	---	---
Top		L	14.17	14.50	1.08	---	---
		M	14.28	14.50	1.05	0.018	0.019
		H	14.34	14.50	1.04	---	---
Left	802.11a (hotspot)	L	14.17	14.50	1.08	---	---
		M	14.28	14.50	1.05	0.001	0.001
		H	14.34	14.50	1.04	---	---
Right		L	14.17	14.50	1.08	---	---
		M	14.28	14.50	1.05	0.031	0.033
		H	14.34	14.50	1.04	---	---



**Mode: WIFI UNII-3 MIMO**

fL (MHz)=5745MHz fM (MHz)=5785MHz fH (MHz)= 5825MHz

SAR Values (Wi-Fi 802.11 n HT20)

Limit of SAR (W/kg): <1.6W/kg (1g Average)

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	802. 11n HT20 (head)	L	16.53	17.00	1.11	---	---
		M	16.62	17.00	1.09	0.148	0.161
		H	16.68	17.00	1.08	---	---
Left Tilted		L	16.53	17.00	1.11	---	---
		M	16.62	17.00	1.09	0.153	0.167
		H	16.68	17.00	1.08	---	---
Right cheek		L	16.53	17.00	1.11	---	---
		M	16.62	17.00	1.09	<b>0.382</b>	<b>0.416</b>
		H	16.68	17.00	1.08	---	---
Right Tilted		L	16.53	17.00	1.11	---	---
		M	16.62	17.00	1.09	0.155	0.169
		H	16.68	17.00	1.08	---	---
Back	802. 11n HT20 (body- worn)	L	16.53	17.00	1.11	---	---
		M	16.62	17.00	1.09	0.170	0.185
		H	16.68	17.00	1.08	---	---
Front		L	16.53	17.00	1.11	---	---
		M	16.62	17.00	1.09	0.057	0.062
		H	16.68	17.00	1.08	---	---
Top	L	16.53	17.00	1.11	---	---	
	M	16.62	17.00	1.09	0.074	0.081	
	H	16.68	17.00	1.08	---	---	
Left	802. 11n HT20 (hotspot)	L	16.53	17.00	1.11	---	---
		M	16.62	17.00	1.09	0.107	0.117
		H	16.68	17.00	1.08	---	---
Right		L	16.53	17.00	1.11	---	---
		M	16.62	17.00	1.09	0.034	0.037
		H	16.68	17.00	1.08	---	---

### Down Antenna

Mode: GSM 850(GPRS)

fL(MHz)=824.2MHz

fM(MHz)=836.5MHz

fH(MHz)= 848.8MHz

SAR Values (850MHz Band)

Limit of SAR (W/kg): <1.6W/kg (1g Average)

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	GPRS 3TX (head)	L	29.35	29.50	1.04	---	---
		M	29.14	29.50	1.09	0.113	0.123
		H	28.78	29.50	1.18	---	---
Left Tilted		L	29.35	29.50	1.04	---	---
		M	29.14	29.50	1.09	0.087	0.095
		H	28.78	29.50	1.18	---	---
Right cheek		L	29.35	29.50	1.04	---	---
		M	29.14	29.50	1.09	<b>0.277</b>	<b>0.302</b>
		H	28.78	29.50	1.18	---	---
Right Tilted	L	29.35	29.50	1.04	---	---	
	M	29.14	29.50	1.09	0.102	0.111	
	H	28.78	29.50	1.18	---	---	
Back	GPRS 3TX (body-worn)	L	29.35	29.50	1.04	---	---
		M	29.14	29.50	1.09	<b>0.341</b>	<b>0.372</b>
		H	28.78	29.50	1.18	---	---
Front		L	29.35	29.50	1.04	---	---
		M	29.14	29.50	1.09	0.338	0.368
		H	28.78	29.50	1.18	---	---
Bottom		L	29.35	29.50	1.04	---	---
		M	29.14	29.50	1.09	0.190	0.207
		H	28.78	29.50	1.18	---	---
Left	GPRS 3TX (hotspot)	L	29.35	29.50	1.04	---	---
		M	29.14	29.50	1.09	0.122	0.133
		H	28.78	29.50	1.18	---	---
Right		L	29.35	29.50	1.04	---	---
		M	29.14	29.50	1.09	0.272	0.296
		H	28.78	29.50	1.18	---	---

**Mode: GSM1900(GPRS)**

fL (MHz)=1850.2MHz      fM (MHz)=1880.0MHz      fH (MHz)=1909.8MHz

SAR Values (1900MHz Band)

**Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	GPRS 3TX (head)	L	26.36	26.50	1.03	---	---
		M	26.04	26.50	1.11	0.136	0.151
		H	25.45	26.50	1.27	---	---
Left Tilted		L	26.36	26.50	1.03	---	---
		M	26.04	26.50	1.11	0.083	0.092
		H	25.45	26.50	1.27	---	---
Right cheek		L	26.36	26.50	1.03	---	---
		M	26.04	26.50	1.11	<b>0.167</b>	<b>0.185</b>
		H	25.45	26.50	1.27	---	---
Right Tilted	L	26.36	26.50	1.03	---	---	
	M	26.04	26.50	1.11	0.093	0.103	
	H	25.45	26.50	1.27	---	---	
Back	GPRS 3TX (body-worn)	L	26.36	26.50	1.03	---	---
		M	26.04	26.50	1.11	0.318	0.353
		H	25.45	26.50	1.27	---	---
Front		L	26.36	26.50	1.03	---	---
		M	26.04	26.50	1.11	0.170	0.189
		H	25.45	26.50	1.27	---	---
Bottom		L	26.36	26.50	1.03	---	---
		M	26.04	26.50	1.11	0.210	0.233
		H	25.45	26.50	1.27	---	---
Left	GPRS 3TX (hotspot)	L	26.36	26.50	1.03	---	---
		M	26.04	26.50	1.11	0.041	0.046
		H	25.45	26.50	1.27	---	---
Right		L	26.36	26.50	1.03	---	---
		M	26.04	26.50	1.11	<b>0.388</b>	<b>0.431</b>
		H	25.45	26.50	1.27	---	---

**Mode: WCDMA BANDII**

fL (MHz)=1852.4MHz      fM (MHz)=1880MHz      fH (MHz)= 1907.6MHz  
SAR Values (WCDMA BANDII)

**Limit of SAR (W/kg) :< 1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	12.2KRMC (head)	L	23.68	24.00	1.08	---	---
		M	23.75	24.00	1.06	0.267	0.283
		H	23.63	24.00	1.09	---	---
Left Tilted		L	23.68	24.00	1.08	---	---
		M	23.75	24.00	1.06	0.167	0.177
		H	23.63	24.00	1.09	---	---
Right cheek		L	23.68	24.00	1.08	---	---
		M	23.75	24.00	1.06	<b>0.432</b>	<b>0.458</b>
		H	23.63	24.00	1.09	---	---
Right Tilted	L	23.68	24.00	1.08	---	---	
	M	23.75	24.00	1.06	0.155	0.164	
	H	23.63	24.00	1.09	---	---	
Back	12.2KRMC (body-worn)	L	23.68	24.00	1.08	---	---
		M	23.75	24.00	1.06	0.746	0.791
		H	23.63	24.00	1.09	---	---
Front		L	23.68	24.00	1.08	---	---
		M	23.75	24.00	1.06	0.450	0.477
		H	23.63	24.00	1.09	---	---
Bottom	L1	23.68	24.00	1.08	---	---	
	M1	23.75	24.00	1.06	0.432	0.458	
	H1	23.63	24.00	1.09	---	---	
Left	12.2KRMC (hotspot)	L	23.68	24.00	1.08	---	---
		M	23.75	24.00	1.06	0.096	0.102
		H	23.63	24.00	1.09	---	---
Right		L1	23.68	24.00	1.08	0.763	0.824
		M1	23.75	24.00	1.06	<b>0.801</b>	<b>0.849</b>
		H1	23.63	24.00	1.09	0.759	0.827
		L2	23.68	24.00	1.08	0.765	0.823
		M2	23.75	24.00	1.06	0.782	0.828
		H2	23.63	24.00	1.09	0.764	0.832

**Mode: WCDMA BANDV**

fL (MHz)=826.4MHz      fM (MHz)=836.4MHz      fH (MHz)= 846.6MHz

SAR Values (WCDMA BANDV)

**Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	12.2KRMC (head)	L	24.26	24.50	1.06	---	---
		M	24.35	24.50	1.04	0.143	0.149
		H	24.19	24.50	1.07	---	---
Left Tilted		L	24.26	24.50	1.06	---	---
		M	24.35	24.50	1.04	0.094	0.098
		H	24.19	24.50	1.07	---	---
Right cheek		L	24.26	24.50	1.06	---	---
		M	24.35	24.50	1.04	<b>0.219</b>	<b>0.228</b>
		H	24.19	24.50	1.07	---	---
Right Tilted	L	24.26	24.50	1.06	---	---	
	M	24.35	24.50	1.04	0.113	0.118	
	H	24.19	24.50	1.07	---	---	
Back	12.2KRMC (body-worn)	L	24.26	24.50	1.06	---	---
		M	24.35	24.50	1.04	<b>0.427</b>	<b>0.444</b>
		H	24.19	24.50	1.07	---	---
Front		L	24.26	24.50	1.06	---	---
		M	24.35	24.50	1.04	0.314	0.327
		H	24.19	24.50	1.07	---	---
Bottom	L	24.26	24.50	1.06	---	---	
	M	24.35	24.50	1.04	0.202	0.210	
	H	24.19	24.50	1.07	---	---	
Left	12.2KRMC (hotspot)	L	24.26	24.50	1.06	---	---
		M	24.35	24.50	1.04	0.098	0.102
		H	24.19	24.50	1.07	---	---
Right		L	24.26	24.50	1.06	---	---
		M	24.35	24.50	1.04	0.237	0.246
		H	24.19	24.50	1.07	---	---

**Mode: LTE Band 2**

fL (MHz)= 1860MHz

fM (MHz)= 1880MHz

fH (MHz)= 1900MHz

SAR Values (LTE BAND2)

**Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	20BW 1RB (head)	L	24.12	24.50	1.09	---	---
		M	24.16	24.50	1.08	0.422	0.456
		H	24.15	24.50	1.08	---	---
Left Tilted		L	24.12	24.50	1.09	---	---
		M	24.16	24.50	1.08	0.340	0.367
		H	24.15	24.50	1.08	---	---
Right cheek		L	24.12	24.50	1.09	---	---
		M	24.16	24.50	1.08	<b>0.629</b>	<b>0.679</b>
		H	24.15	24.50	1.08	---	---
Right Tilted	L	24.12	24.50	1.09	---	---	
	M	24.16	24.50	1.08	0.464	0.501	
	H	24.15	24.50	1.08	---	---	
Back	20BW 1RB (body-worn)	L1	24.12	24.50	1.09	0.871	0.949
		M1	24.16	24.50	1.08	<b>0.938</b>	<b>1.013</b>
		H1	24.15	24.50	1.08	0.891	0.962
		L2	24.12	24.50	1.09	0.874	0.954
		M2	24.16	24.50	1.08	0.927	1.002
		H2	24.15	24.50	1.08	0.870	0.943
Front		L	24.12	24.50	1.09	---	---
		M	24.16	24.50	1.08	0.603	0.651
		H	24.15	24.50	1.08	---	---
Bottom		L1	24.12	24.50	1.09	---	---
		M1	24.16	24.50	1.08	0.273	0.295
		H1	24.15	24.50	1.08	---	---
Left	20BW 1RB (hotspot)	L	24.12	24.50	1.09	---	---
		M	24.16	24.50	1.08	0.104	0.112
		H	24.15	24.50	1.08	---	---
Right		L	24.12	24.50	1.09	---	---
		M	24.16	24.50	1.08	0.724	0.782
		H	24.15	24.50	1.08	---	---

Left cheek	20BW 50%RB (head)	L	23.10	23.50	1.10	---	---
		M	23.18	23.50	1.08	0.376	0.406
		H	23.22	23.50	1.07	---	---
Left Tilted		L	23.10	23.50	1.10	---	---
		M	23.18	23.50	1.08	0.299	0.323
		H	23.22	23.50	1.07	---	---
Right cheek		L	23.10	23.50	1.10	---	---
		M	23.18	23.50	1.08	0.582	0.629
		H	23.22	23.50	1.07	---	---
Right Tilted	L	23.10	23.50	1.10	---	---	
	M	23.18	23.50	1.08	0.421	0.455	
	H	23.22	23.50	1.07	---	---	
Back	20BW 50%RB (body-worn)	L	23.10	23.50	1.10	---	---
		M	23.18	23.50	1.08	0.740	0.799
		H	23.22	23.50	1.07	---	---
Front		L	23.10	23.50	1.10	---	---
		M	23.18	23.50	1.08	0.472	0.510
		H	23.22	23.50	1.07	---	---
Back	20BW 100%RB (body-worn)	L	23.07	23.50	1.10	---	---
		M	23.17	23.50	1.08	0.731	0.789
		H	23.18	23.50	1.08	---	---

**Mode: LTE Band 4**

fL (MHz)= 1710.7MHz      fM (MHz)= 1732.5MHz      fH (MHz)= 1754.3MHz

SAR Values (LTE BAND4)

**Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	20BW 1RB (head)	L	24.11	24.50	1.09	---	---
		M	24.26	24.50	1.06	0.466	0.494
		H	24.18	24.50	1.08	---	---
Left Tilted		L	24.11	24.50	1.09	---	---
		M	24.26	24.50	1.06	0.249	0.264
		H	24.18	24.50	1.08	---	---
Right cheek		L	24.11	24.50	1.09	---	---
		M	24.26	24.50	1.06	<b>0.508</b>	<b>0.538</b>
		H	24.18	24.50	1.08	---	---
Right Tilted	L	24.11	24.50	1.09	---	---	
	M	24.26	24.50	1.06	0.344	0.365	
	H	24.18	24.50	1.08	---	---	
Back	20BW 1RB (body-worn)	L1	24.11	24.50	1.09	0.770	0.839
		M1	24.26	24.50	1.06	<b>0.812</b>	<b>0.861</b>
		H1	24.18	24.50	1.08	0.796	0.860
		L2	24.11	24.50	1.09	0.774	0.847
		M2	24.26	24.50	1.06	0.805	0.851
		H2	24.18	24.50	1.08	0.793	0.854
Front		L	24.11	24.50	1.09	---	---
		M	24.26	24.50	1.06	0.492	0.522
		H	24.18	24.50	1.08	---	---
Bottom		L	24.11	24.50	1.09	---	---
		M	24.26	24.50	1.06	0.446	0.473
		H	24.18	24.50	1.08	---	---
Left	20BW 1RB (hotspot)	L	24.11	24.50	1.09	---	---
		M	24.26	24.50	1.06	0.041	0.043
		H	24.18	24.50	1.08	---	---
Right		L	24.11	24.50	1.09	---	---
		M	24.26	24.50	1.06	0.596	0.632
		H	24.18	24.50	1.08	---	---



Left cheek	20BW 50%RB (head)	L	23.16	23.50	1.08	---	---
		M	23.14	23.50	1.09	0.420	0.458
		H	23.16	23.50	1.08	---	---
Left Tilted		L	23.16	23.50	1.08	---	---
		M	23.14	23.50	1.09	0.208	0.227
		H	23.16	23.50	1.08	---	---
Right cheek		L	23.16	23.50	1.08	---	---
		M	23.14	23.50	1.09	0.461	0.502
		H	23.16	23.50	1.08	---	---
Right Tilted	L	23.16	23.50	1.08	---	---	
	M	23.14	23.50	1.09	0.301	0.328	
	H	23.16	23.50	1.08	---	---	
Back	20BW 50%RB (body-worn)	L	23.16	23.50	1.08	---	---
		M	23.14	23.50	1.09	0.604	0.658
		H	23.16	23.50	1.08	---	---
Front		L	23.16	23.50	1.08	---	---
		M	23.14	23.50	1.09	0.395	0.431
		H	23.16	23.50	1.08	---	---
Back	20BW 100%RB (body-worn)	L	23.11	23.50	1.09	---	---
		M	23.11	23.50	1.09	0.601	0.655
		H	23.13	23.50	1.09	---	---

**Mode: LTE Band 5**

fL (MHz)=829 MHz      fM (MHz)=836.5MHz      fH (MHz)= 844MHz

SAR Values (LTE BAND5)

**Limit of SAR (W/kg) : <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	10BW 1RB (head)	L	24.82	25.00	1.04	---	---
		M	24.88	25.00	1.03	0.159	0.164
		H	24.78	25.00	1.05	---	---
Left Tilted		L	24.82	25.00	1.04	---	---
		M	24.88	25.00	1.03	0.107	0.110
		H	24.78	25.00	1.05	---	---
Right cheek		L	24.82	25.00	1.04	---	---
		M	24.88	25.00	1.03	<b>0.235</b>	<b>0.242</b>
		H	24.78	25.00	1.05	---	---
Right Tilted	L	24.82	25.00	1.04	---	---	
	M	24.88	25.00	1.03	0.112	0.115	
	H	24.78	25.00	1.05	---	---	
Back	10BW 1RB (body-worn)	L	24.82	25.00	1.04	---	---
		M	24.88	25.00	1.03	<b>0.485</b>	<b>0.500</b>
		H	24.78	25.00	1.05	---	---
Front		L	24.82	25.00	1.04	---	---
		M	24.88	25.00	1.03	0.417	0.430
		H	24.78	25.00	1.05	---	---
Bottom		L	24.82	25.00	1.04	---	---
		M	24.88	25.00	1.03	0.137	0.141
		H	24.78	25.00	1.05	---	---
Left	10BW 1RB (hotspot)	L	24.82	25.00	1.04	---	---
		M	24.88	25.00	1.03	0.087	0.090
		H	24.78	25.00	1.05	---	---
Right		L	24.82	25.00	1.04	---	---
		M	24.88	25.00	1.03	0.304	0.313
		H	24.78	25.00	1.05	---	---

Left cheek	10BW 50%RB (head)	L	24.07	24.50	1.10	---	---
		M	23.81	24.50	1.17	0.113	0.132
		H	24.12	24.50	1.09	---	---
Left Tilted		L	24.07	24.50	1.10	---	---
		M	23.81	24.50	1.17	0.066	0.077
		H	24.12	24.50	1.09	---	---
Right cheek		L	24.07	24.50	1.10	---	---
		M	23.81	24.50	1.17	0.151	0.177
		H	24.12	24.50	1.09	---	---
Right Tilted	L	24.07	24.50	1.10	---	---	
	M	23.81	24.50	1.17	0.069	0.081	
	H	24.12	24.50	1.09	---	---	
Back	10BW 50%RB (body-worn)	L	24.07	24.50	1.10	---	---
		M	23.81	24.50	1.17	0.317	0.371
		H	24.12	24.50	1.09	---	---
Front		L	24.07	24.50	1.10	---	---
		M	23.81	24.50	1.17	0.284	0.332
		H	24.12	24.50	1.09	---	---

**Mode: LTE Band 7**

fL (MHz)=2510 MHz

fM (MHz)=2535MHz

fH (MHz)= 2560MHz

SAR Values (LTE BAND7)

**Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	position					1g Average	1g Average
Left cheek	20BW 1RB (head)	L	24.45	24.50	1.01	---	---
		M	24.32	24.50	1.04	0.146	0.152
		H	24.25	24.50	1.06	---	---
Left Tilted		L	24.45	24.50	1.01	---	---
		M	24.32	24.50	1.04	<b>0.234</b>	<b>0.243</b>
		H	24.25	24.50	1.06	---	---
Right cheek		L	24.45	24.50	1.01	---	---
		M	24.32	24.50	1.04	0.153	0.159
		H	24.25	24.50	1.06	---	---
Right Tilted	L	24.45	24.50	1.01	---	---	
	M	24.32	24.50	1.04	0.198	0.206	
	H	24.25	24.50	1.06	---	---	
Back	20BW 1RB (body-worn)	L	24.45	24.50	1.01	---	---
		M	24.32	24.50	1.04	0.765	0.796
		H	24.25	24.50	1.06	---	---
Front		L	24.45	24.50	1.01	---	---
		M	24.32	24.50	1.04	0.740	0.770
		H	24.45	24.50	1.01	---	---
Bottom		L	24.45	24.50	1.01	---	---
		M	24.32	24.50	1.04	0.383	0.398
		H	24.25	24.50	1.06	---	---
Left	20BW 1RB (hotspot)	L	24.45	24.50	1.01	---	---
		M	24.32	24.50	1.04	0.109	0.113
		H	24.25	24.50	1.06	---	---
Right		L	24.45	24.50	1.01	---	---
		M	24.32	24.50	1.04	0.586	0.609
		H	24.25	24.50	1.06	---	---

Left cheek	20BW 50%RB (head)	L	23.67	24.00	1.08	---	---
		M	23.39	24.00	1.15	0.030	0.035
		H	23.44	24.00	1.14	---	---
Left Tilted		L	23.67	24.00	1.08	---	---
		M	23.39	24.00	1.15	0.088	0.101
		H	23.44	24.00	1.14	---	---
Right cheek		L	23.67	24.00	1.08	---	---
		M	23.39	24.00	1.15	0.026	0.030
		H	23.44	24.00	1.14	---	---
Right Tilted	L	23.67	24.00	1.08	---	---	
	M	23.39	24.00	1.15	0.025	0.029	
	H	23.44	24.00	1.14	---	---	
Back	20BW 50%RB (body-worn)	L	23.67	24.00	1.08	---	---
		M	23.39	24.00	1.15	0.593	0.682
		H	23.44	24.00	1.14	---	---
Front		L	23.67	24.00	1.08	---	---
		M	23.39	24.00	1.15	0.518	0.596
		H	23.44	24.00	1.14	---	---

**Mode: LTE Band 12**

fL (MHz)=704 MHz      fM (MHz)=707.5MHz      fH (MHz)= 711MHz

SAR Values (LTE BAND12)

**Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	position					1g Average	1g Average
Left cheek	10BW 1RB (head)	L	23.92	24.50	1.14	---	---
		M	24.15	24.50	1.08	0.090	0.097
		H	24.22	24.50	1.07	---	---
Left Tilted		L	23.92	24.50	1.14	---	---
		M	24.15	24.50	1.08	0.059	0.064
		H	24.22	24.50	1.07	---	---
Right cheek		L	23.92	24.50	1.14	---	---
		M	24.15	24.50	1.08	<b>0.109</b>	<b>0.118</b>
		H	24.22	24.50	1.07	---	---
Right Tilted	L	23.92	24.50	1.14	---	---	
	M	24.15	24.50	1.08	0.075	0.081	
	H	24.22	24.50	1.07	---	---	
Back	10BW 1RB (body-worn)	L	23.92	24.50	1.14	---	---
		M	24.15	24.50	1.08	<b>0.266</b>	<b>0.287</b>
		H	24.22	24.50	1.07	---	---
Front		L	23.92	24.50	1.14	---	---
		M	24.15	24.50	1.08	0.224	0.242
		H	24.22	24.50	1.07	---	---
Bottom		L	23.92	24.50	1.14	---	---
		M	24.15	24.50	1.08	0.072	0.078
		H	24.22	24.50	1.07	---	---
Left	10BW 1RB (hotspot)	L	23.92	24.50	1.14	---	---
		M	24.15	24.50	1.08	0.110	0.119
		H	24.22	24.50	1.07	---	---
Right		L	23.92	24.50	1.14	---	---
		M	24.15	24.50	1.08	0.119	0.129
		H	24.22	24.50	1.07	---	---

Left cheek	10BW 50%RB (head)	L	23.27	23.50	1.05	---	---
		M	23.32	23.50	1.04	0.044	0.046
		H	23.27	23.50	1.05	---	---
Left Tilted		L	23.27	23.50	1.05	---	---
		M	23.32	23.50	1.04	0.018	0.019
		H	23.27	23.50	1.05	---	---
Right cheek		L	23.27	23.50	1.05	---	---
		M	23.32	23.50	1.04	0.046	0.048
		H	23.27	23.50	1.05	---	---
Right Tilted	L	23.27	23.50	1.05	---	---	
	M	23.32	23.50	1.04	0.032	0.033	
	H	23.27	23.50	1.05	---	---	
Back	10BW 50%RB (body-worn)	L	23.27	23.50	1.05	---	---
		M	23.32	23.50	1.04	0.126	0.131
		H	23.27	23.50	1.05	---	---
Front		L	23.27	23.50	1.05	---	---
		M	23.32	23.50	1.04	0.108	0.112
		H	23.27	23.50	1.05	---	---

**Mode: LTE Band 13**

fL (MHz)= 782 MHz fM (MHz)= 782MHz fH (MHz)= 782MHz

SAR Values (LTE BAND13)

**Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	position					1g Average	1g Average
Left cheek	10BW 1RB (head)	L	24.82	25.00	1.04	---	---
		M	24.82	25.00	1.04	0.133	0.138
		H	24.82	25.00	1.04	---	---
Left Tilted		L	24.82	25.00	1.04	---	---
		M	24.82	25.00	1.04	0.087	0.090
		H	24.82	25.00	1.04	---	---
Right cheek		L	24.82	25.00	1.04	---	---
		M	24.82	25.00	1.04	<b>0.146</b>	<b>0.152</b>
		H	24.82	25.00	1.04	---	---
Right Tilted	L	24.82	25.00	1.04	---	---	
	M	24.82	25.00	1.04	0.084	0.087	
	H	24.82	25.00	1.04	---	---	
Back	10BW 1RB (body-worn)	L	24.82	25.00	1.04	---	---
		M	24.82	25.00	1.04	0.301	0.313
		H	24.82	25.00	1.04	---	---
Front		L	24.82	25.00	1.04	---	---
		M	24.82	25.00	1.04	<b>0.316</b>	<b>0.329</b>
		H	24.82	25.00	1.04	---	---
Bottom	L	24.82	25.00	1.04	---	---	
	M	24.82	25.00	1.04	0.095	0.099	
	H	24.82	25.00	1.04	---	---	
Left	10BW 1RB (hotspot)	L	24.82	25.00	1.04	---	---
		M	24.82	25.00	1.04	0.100	0.104
		H	24.82	25.00	1.04	---	---
Right		L	24.82	25.00	1.04	---	---
		M	24.82	25.00	1.04	0.227	0.236
		H	24.82	25.00	1.04	---	---



Left cheek	10BW 50%RB (head)	L	24.12	24.50	1.09	---	---
		M	24.12	24.50	1.09	0.087	0.095
		H	24.12	24.50	1.09	---	---
Left Tilted		L	24.12	24.50	1.09	---	---
		M	24.12	24.50	1.09	0.046	0.050
		H	24.12	24.50	1.09	---	---
Right cheek		L	24.12	24.50	1.09	---	---
		M	24.12	24.50	1.09	0.113	0.123
		H	24.12	24.50	1.09	---	---
Right Tilted	L	24.12	24.50	1.09	---	---	
	M	24.12	24.50	1.09	0.041	0.045	
	H	24.12	24.50	1.09	---	---	
Back	10BW 50%RB (body-worn)	L	24.12	24.50	1.09	---	---
		M	24.12	24.50	1.09	0.201	0.219
		H	24.12	24.50	1.09	---	---
Front		L	24.12	24.50	1.09	---	---
		M	24.12	24.50	1.09	0.185	0.202
		H	24.12	24.50	1.09	---	---

**Mode: LTE Band 66**

fL (MHz)=1720MHz      fM (MHz)=1745MHz      fH (MHz)= 1770MHz

SAR Values (LTE BAND66)

**Limit of SAR (W/kg): <1.6W/kg (1g Average)**

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	position					1g Average	1g Average
Left cheek	20BW 1RB (head)	L	24.72	25.00	1.07	---	---
		M	24.78	25.00	1.05	0.316	0.332
		H	24.75	25.00	1.06	---	---
Left Tilted		L	24.72	25.00	1.07	---	---
		M	24.78	25.00	1.05	0.285	0.299
		H	24.75	25.00	1.06	---	---
Right cheek		L	24.72	25.00	1.07	---	---
		M	24.78	25.00	1.05	<b>0.569</b>	<b>0.597</b>
		H	24.75	25.00	1.06	---	---
Right Tilted	L	24.72	25.00	1.07	---	---	
	M	24.78	25.00	1.05	0.285	0.299	
	H	24.75	25.00	1.06	---	---	
Back	20BW 1RB (body-worn)	L	24.72	25.00	1.07	---	---
		M	24.78	25.00	1.05	<b>0.710</b>	<b>0.746</b>
		H	24.75	25.00	1.06	---	---
Front		L	24.72	25.00	1.07	---	---
		M	24.78	25.00	1.05	0.562	0.590
		H	24.75	25.00	1.06	---	---
Bottom		L	24.72	25.00	1.07	---	---
		M	24.78	25.00	1.05	0.382	0.401
		H	24.75	25.00	1.06	---	---
Left	20BW 1RB (hotspot)	L	24.72	25.00	1.07	---	---
		M	24.78	25.00	1.05	0.049	0.051
		H	24.75	25.00	1.06	---	---
Right		L	24.72	25.00	1.07	---	---
		M	24.78	25.00	1.05	0.593	0.623
		H	24.75	25.00	1.06	---	---

Left cheek	20BW 50%RB (head)	L	23.84	24.00	1.04	---	---
		M	23.89	24.00	1.03	0.270	0.278
		H	23.85	24.00	1.04	---	---
Left Tilted		L	23.84	24.00	1.04	---	---
		M	23.89	24.00	1.03	0.244	0.251
		H	23.85	24.00	1.04	---	---
Right cheek		L	23.84	24.00	1.04	---	---
		M	23.89	24.00	1.03	0.522	0.538
		H	23.85	24.00	1.04	---	---
Right Tilted	L	23.84	24.00	1.04	---	---	
	M	23.89	24.00	1.03	0.242	0.249	
	H	23.85	24.00	1.04	---	---	
Back	20BW 50%RB (body-worn)	L	23.84	24.00	1.04	---	---
		M	23.89	24.00	1.03	0.573	0.590
		H	23.85	24.00	1.04	---	---
Front		L	23.84	24.00	1.04	---	---
		M	23.89	24.00	1.03	0.382	0.393
		H	23.85	24.00	1.04	---	---

## 6.12 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 (~ 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.

The Highest Reported SAR configuration in Each Frequency Band

Frequency band	Air interface	Head(w/kg)	Body-worn(w/kg)	Hotspot(w/kg)
750 MHz	LTE BAND12 LTE BAND13	>0.8	<0.8	<0.8
835 MHz	GSM850 WCDMA BAND5 LTE BAND5	>0.8	<0.8	<0.8
1800/2000 MHz	GSM1900 WCDMA BAND2 LTE BAND2 LTE BAND4 LTE BAND66	>0.8	>0.8	>0.8
2.4 GHz	BT/BLE WIFI 2.4G LTE BAND7	<0.8	<0.8	<0.8
5 GHz	WIFI UNII-1 WIFI UNII-3	<0.8	<0.8	<0.8

## 6.13 Simultaneous Transmission SAR Analysis

### Up Antenna

#### The sum of SAR values for GSM & Wi-Fi 2.4G/ Wi-Fi 5G

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY WORN	MAXIMUM SAR VALUE FOR HOTSPOT
<b>GSM</b>	1.091	0.250	0.177
<b>Wi-Fi</b>	0.466	0.293	0.578
<b>Sum</b>	1.557	0.543	0.755
<b>Note</b>	Right cheek: GSM850+WIFI2.4G ANT1	Back: GSM850+ WIFI2.4G ANT1	Left: GSM850+ WIFI2.4G ANT1

According to the above tables, the sum of SAR values for GSM and Wi-Fi < 1.6W/kg. So simultaneous transmission SAR are not required for Wi-Fi transmitter.

#### The sum of SAR values for WCDMA & Wi-Fi 2.4G/ Wi-Fi 5G

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY	MAXIMUM SAR VALUE FOR HOTSPOT
<b>WCDMA</b>	1.021	0.429	0.185
<b>Wi-Fi</b>	0.466	0.293	0.578
<b>Sum</b>	1.487	0.722	0.763
<b>Note</b>	Right cheek: WCDMAV+ WIFI2.4G ANT1	Back: WCDMAII+ WIFI2.4G ANT1	Left: WCDMAII+ WIFI2.4G ANT1

According to the above tables, the sum of SAR values for WCDMA and Wi-Fi < 1.6W/kg. So simultaneous transmission SAR are not required for Wi-Fi transmitter.5

#### The sum of SAR values for LTE& Wi-Fi 2.4G/ Wi-Fi 5G

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY	MAXIMUM SAR VALUE FOR HOTSPOT
<b>LTE</b>	1.196	0.419	0.244
<b>Wi-Fi</b>	0.357	0.293	0.578
<b>Sum</b>	1.553	0.712	0.822
<b>Note</b>	Right Tilt: LTE4 + WIFI5G-UNII1 MIMO	Back: LTE7 + WIFI2.4G ANT1	Left: LTE66 + WIFI2.4G ANT1

According to the above tables, the sum of SAR values for LTE and Wi-Fi < 1.6W/kg. So simultaneous transmission SAR are not required for Wi-Fi transmitter.

**The sum of SAR values for GSM & Bluetooth & Wi-Fi5G**

	<b>MAXIMUM SAR VALUE FOR HEAD</b>	<b>MAXIMUM SAR VALUE FOR BODY WORN</b>
<b>GSM</b>	1.091	0.250
<b>Bluetooth</b>	0.004	0.004
<b>Wi-Fi 5G</b>	0.416	0.209
<b>Sum</b>	1.511	0.463
<b>Note</b>	Right cheek: GSM850+BT+ WIFI5G-UNII3 MIMO	Back: GSM850+BT+ WIFI5G-UNII3 ANT1

According to the above tables, the sum of SAR values for GSM, Bluetooth and Wi-Fi 5G < 1.6W/kg. So simultaneous transmission SAR are not required for Bluetooth transmitter.

**The sum of SAR values for WCDMA & Bluetooth & Wi-Fi5G**

	<b>MAXIMUM SAR VALUE FOR HEAD</b>	<b>MAXIMUM SAR VALUE FOR BODY WORN</b>
<b>WCDMA</b>	1.021	0.429
<b>Bluetooth</b>	0.004	0.004
<b>Wi-Fi 5G</b>	0.416	0.209
<b>Sum</b>	1.441	0.642
<b>Note</b>	Right cheek: WCDMAV+BT+ WIFI5G-UNII3 MIMO	Back: WCDMAII+BT+ WIFI5G-UNII3 ANT1

According to the above tables, the sum of SAR values for WCDMA, Bluetooth and Wi-Fi 5G < 1.6W/kg. So simultaneous transmission SAR are not required for Bluetooth transmitter.

**The sum of SAR values for LTE& Bluetooth & Wi-Fi5G**

	<b>MAXIMUM SAR VALUE FOR HEAD</b>	<b>MAXIMUM SAR VALUE FOR BODY WORN</b>
<b>LTE</b>	1.196	0.419
<b>Bluetooth</b>	0.003	0.004
<b>Wi-Fi 5G</b>	0.357	0.209
<b>Sum</b>	1.556	0.632
<b>Note</b>	Right tilt: LTE4+BT+ WIFI5G-UNII1 MIMO	Back: LTE7 +BT+ WIFI5G-UNII3 ANT1

According to the above tables, the sum of SAR values for LTE, Bluetooth and Wi-Fi 5G < 1.6W/kg. So simultaneous transmission SAR are not required for Wi-Fi transmitter.

## Down Antenna

### The sum of SAR values for GSM & Wi-Fi 2.4G/ Wi-Fi 5G

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY WORN	MAXIMUM SAR VALUE FOR HOTSPOT
<b>GSM</b>	0.302	0.372	0.133
<b>Wi-Fi</b>	0.466	0.293	0.578
<b>Sum</b>	0.768	0.665	0.711
<b>Note</b>	Right cheek: GSM850+WIFI2.4G ANT1	Back: GSM850+ WIFI2.4G ANT1	Left: GSM850+ WIFI2.4G ANT1

According to the above tables, the sum of SAR values for GSM and Wi-Fi < 1.6W/kg. So simultaneous transmission SAR are not required for Wi-Fi transmitter.

### The sum of SAR values for WCDMA & Wi-Fi 2.4G/ Wi-Fi 5G

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY	MAXIMUM SAR VALUE FOR HOTSPOT
<b>WCDMA</b>	0.458	0.791	0.791
<b>Wi-Fi</b>	0.466	0.293	0.293
<b>Sum</b>	0.924	1.084	1.084
<b>Note</b>	Right cheek: WCDMAII + WIFI2.4G ANT1	Back: WCDMAII+ WIFI2.4G ANT1	Back: WCDMAII+ WIFI2.4G ANT1

According to the above tables, the sum of SAR values for WCDMA and Wi-Fi < 1.6W/kg. So simultaneous transmission SAR are not required for Wi-Fi transmitter.

### The sum of SAR values for LTE & Wi-Fi 2.4G/ Wi-Fi 5G

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY	MAXIMUM SAR VALUE FOR HOTSPOT
<b>LTE</b>	0.679	1.013	1.013
<b>Wi-Fi</b>	0.466	0.293	0.293
<b>Sum</b>	1.145	1.306	1.306
<b>Note</b>	Right cheek: LTE2 + WIFI2.4G ANT1	Back: LTE2 + WIFI2.4G ANT1	Back: LTE2 + WIFI2.4G ANT1

According to the above tables, the sum of SAR values for LTE and Wi-Fi < 1.6W/kg. So simultaneous transmission SAR are not required for Wi-Fi transmitter.

### The sum of SAR values for GSM & Bluetooth & Wi-Fi5G

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY WORN
<b>GSM</b>	0.302	0.372
<b>Bluetooth</b>	0.004	0.004
<b>Wi-Fi 5G</b>	0.416	0.209
<b>Sum</b>	0.722	0.463
<b>Note</b>	Right cheek: GSM850+BT+ WIFI5G-UNII3 MIMO	Back: GSM850+BT+ WIFI5G-UNII3 ANT1

According to the above tables, the sum of SAR values for GSM and Bluetooth < 1.6W/kg. So simultaneous transmission SAR are not required for Bluetooth transmitter.

### The sum of SAR values for WCDMA & Bluetooth & Wi-Fi5G

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY WORN
<b>WCDMA</b>	0.458	0.791
<b>Bluetooth</b>	0.004	0.004
<b>Wi-Fi 5G</b>	0.416	0.209
<b>Sum</b>	0.878	0.642
<b>Note</b>	Right cheek: WCDMAII+BT+ WIFI5G-UNII3 MIMO	Back: WCDMAII+BT+ WIFI5G-UNII3 ANT1

According to the above tables, the sum of SAR values for WCDMA and Bluetooth < 1.6W/kg. So simultaneous transmission SAR are not required for Bluetooth transmitter.

### The sum of SAR values for LTE& Bluetooth & Wi-Fi5G

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY WORN
<b>LTE</b>	0.679	1.013
<b>Bluetooth</b>	0.004	0.004
<b>Wi-Fi 5G</b>	0.416	0.209
<b>Sum</b>	1.099	0.632
<b>Note</b>	Right cheek: LTE2+BT+ WIFI5G-UNII3 MIMO	Back: LTE2 +BT+ WIFI5G-UNII3 ANT1

According to the above tables, the sum of SAR values for LTE and Bluetooth < 1.6W/kg. So simultaneous transmission SAR are not required for Bluetooth transmitter.



## 7 MEASUREMENT UNCERTAINTY

(0.3 - 3 GHz range)								
Error Description	Uncert. value	Prob. Dist.	Div.	( $c_i$ ) 1g	( $c_i$ ) 10g	Std. Unc. (1g)	Std. Unc. (10g)	( $v_i$ ) $v_{eff}$
<b>Measurement System</b>								
Probe Calibration	±6.0 %	N	1	1	1	±6.0 %	±6.0 %	∞
Axial Isotropy	±4.7 %	R	$\sqrt{3}$	0.7	0.7	±1.9 %	±1.9 %	∞
Hemispherical Isotropy	±9.6 %	R	$\sqrt{3}$	0.7	0.7	±3.9 %	±3.9 %	∞
Boundary Effects	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Linearity	±4.7 %	R	$\sqrt{3}$	1	1	±2.7 %	±2.7 %	∞
System Detection Limits	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Modulation Response <sup>m</sup>	±2.4 %	R	$\sqrt{3}$	1	1	±1.4 %	±1.4 %	∞
Readout Electronics	±0.3 %	N	1	1	1	±0.3 %	±0.3 %	∞
Response Time	±0.8 %	R	$\sqrt{3}$	1	1	±0.5 %	±0.5 %	∞
Integration Time	±2.6 %	R	$\sqrt{3}$	1	1	±1.5 %	±1.5 %	∞
RF Ambient Noise	±3.0 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
RF Ambient Reflections	±3.0 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
Probe Positioner	±0.4 %	R	$\sqrt{3}$	1	1	±0.2 %	±0.2 %	∞
Probe Positioning	±2.9 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
Max. SAR Eval.	±2.0 %	R	$\sqrt{3}$	1	1	±1.2 %	±1.2 %	∞
<b>Test Sample Related</b>								
Device Positioning	±2.9 %	N	1	1	1	±2.9 %	±2.9 %	145
Device Holder	±3.6 %	N	1	1	1	±3.6 %	±3.6 %	5
Power Drift	±5.0 %	R	$\sqrt{3}$	1	1	±2.9 %	±2.9 %	∞
Power Scaling <sup>p</sup>	±0 %	R	$\sqrt{3}$	1	1	±0.0 %	±0.0 %	∞
<b>Phantom and Setup</b>								
Phantom Uncertainty	±6.1 %	R	$\sqrt{3}$	1	1	±3.5 %	±3.5 %	∞
SAR correction	±1.9 %	R	$\sqrt{3}$	1	0.84	±1.1 %	±0.9 %	∞
Liquid Conductivity (mea.) <sup>DAK</sup>	±2.5 %	R	$\sqrt{3}$	0.78	0.71	±1.1 %	±1.0 %	∞
Liquid Permittivity (mea.) <sup>DAK</sup>	±2.5 %	R	$\sqrt{3}$	0.26	0.26	±0.3 %	±0.4 %	∞
Temp. unc. - Conductivity <sup>BB</sup>	±3.4 %	R	$\sqrt{3}$	0.78	0.71	±1.5 %	±1.4 %	∞
Temp. unc. - Permittivity <sup>BB</sup>	±0.4 %	R	$\sqrt{3}$	0.23	0.26	±0.1 %	±0.1 %	∞
Combined Std. Uncertainty						±11.2 %	±11.1 %	361
Expanded STD Uncertainty						±22.3 %	±22.2 %	

(3 - 6 GHz range)

Error Description	Uncert. value	Prob. Dist.	Div.	( $c_1$ ) 1g	( $c_2$ ) 10g	Std. Unc. (1g)	Std. Unc. (10g)	( $v_i$ ) $v_{eff}$
<b>Measurement System</b>								
Probe Calibration	±6.55 %	N	1	1	1	±6.55 %	±6.55 %	∞
Axial Isotropy	±4.7 %	R	$\sqrt{3}$	0.7	0.7	±1.9 %	±1.9 %	∞
Hemispherical Isotropy	±9.6 %	R	$\sqrt{3}$	0.7	0.7	±3.9 %	±3.9 %	∞
Boundary Effects	±2.0 %	R	$\sqrt{3}$	1	1	±1.2 %	±1.2 %	∞
Linearity	±4.7 %	R	$\sqrt{3}$	1	1	±2.7 %	±2.7 %	∞
System Detection Limits	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Modulation Response <sup>m</sup>	±2.4 %	R	$\sqrt{3}$	1	1	±1.4 %	±1.4 %	∞
Readout Electronics	±0.3 %	N	1	1	1	±0.3 %	±0.3 %	∞
Response Time	±0.8 %	R	$\sqrt{3}$	1	1	±0.5 %	±0.5 %	∞
Integration Time	±2.6 %	R	$\sqrt{3}$	1	1	±1.5 %	±1.5 %	∞
RF Ambient Noise	±3.0 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
RF Ambient Reflections	±3.0 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
Probe Positioner	±0.8 %	R	$\sqrt{3}$	1	1	±0.5 %	±0.5 %	∞
Probe Positioning	±6.7 %	R	$\sqrt{3}$	1	1	±3.9 %	±3.9 %	∞
Max. SAR Eval.	±4.0 %	R	$\sqrt{3}$	1	1	±2.3 %	±2.3 %	∞
<b>Test Sample Related</b>								
Device Positioning	±2.9 %	N	1	1	1	±2.9 %	±2.9 %	145
Device Holder	±3.6 %	N	1	1	1	±3.6 %	±3.6 %	5
Power Drift	±5.0 %	R	$\sqrt{3}$	1	1	±2.9 %	±2.9 %	∞
Power Scaling <sup>P</sup>	±0 %	R	$\sqrt{3}$	1	1	±0.0 %	±0.0 %	∞
<b>Phantom and Setup</b>								
Phantom Uncertainty	±6.6 %	R	$\sqrt{3}$	1	1	±3.8 %	±3.8 %	∞
SAR correction	±1.9 %	R	$\sqrt{3}$	1	0.84	±1.1 %	±0.9 %	∞
Liquid Conductivity (mea.) <sup>DAK</sup>	±2.5 %	R	$\sqrt{3}$	0.78	0.71	±1.1 %	±1.0 %	∞
Liquid Permittivity (mea.) <sup>DAK</sup>	±2.5 %	R	$\sqrt{3}$	0.26	0.26	±0.3 %	±0.4 %	∞
Temp. unc. - Conductivity <sup>BB</sup>	±3.4 %	R	$\sqrt{3}$	0.78	0.71	±1.5 %	±1.4 %	∞
Temp. unc. - Permittivity <sup>BB</sup>	±0.4 %	R	$\sqrt{3}$	0.23	0.26	±0.1 %	±0.1 %	∞
Combined Std. Uncertainty						±12.3 %	±12.2 %	748
Expanded STD Uncertainty						±24.6 %	±24.5 %	

## **8 TEST EQUIPMENTS**

The measurements were performed using an automated near-field scanning system, DASY5, manufactured by Schmid & Partner Engineering AG (SPEAG) in Switzerland. The SAR extrapolation algorithm used in all measurements was the 'advanced extrapolation' algorithm.

The following table lists calibration dates of SPEAG components:

Test Equipment	Model	Serial Number	Calibration date	Calibration Due data
DAE	DAE4	720	2018.10.15	2019.10.14
DAE	DAE4	546	2018.10.15	2019.10.14
Dosimetric E-field Probe	ES3DV3	3127	2018.11.02	2019.11.01
Dosimetric E-field Probe	EX4DV3	3708	2018.10.22	2019.10.21
Dipole Validation Kit	D750V3	1101	2017.09.13	2020.09.12
Dipole Validation Kit	D835V2	4d023	2017.09.13	2020.09.12
Dipole Validation Kit	D1800V2	2d084	2017.09.15	2020.09.14
Dipole Validation Kit	D2000V2	1009	2018.02.01	2021.01.31
Dipole Validation Kit	D2450V2	738	2017.09.18	2020.09.17
Dipole Validation Kit	D5GHzV2	1079	2017.09.25	2020.09.24

Additional test equipment used in testing:

Test Equipment	Model	Serial Number	Calibration date	Calibration Due data
Signal Generator	E4428C	MY45280865	2018.08.20	2019.08.19
Signal Generator	SML 03	103514	2018.08.20	2019.08.19
Power meter	E4417A	MY45101182	2018.08.20	2019.08.19
Power Sensor	E4412A	MY41502214	2018.08.20	2019.08.19
Power Sensor	E4412A	MY41502130	2018.08.20	2019.08.19
Power meter	E4417A	MY45101004	2018.08.20	2019.08.19
Power Sensor	E9300B	MY41496001	2018.08.20	2019.08.19
Power Sensor	E9300B	MY41496003	2018.08.20	2019.08.19
Communication Tester	E5515C	MY48367401	2018.08.20	2019.08.19
Communication Tester	CMU500	114666	2018.08.20	2019.08.19
Communication Tester	MT8820C	6201300660	2018.08.20	2019.08.19
Communication Tester	MT8821C	6201547819	2018.08.20	2019.08.19
Vector Network Analyzer	E5072A	MY51100334	2018.03.01	2019.02.28
Vector Network Analyzer	VNA R140	0011213	2018.10.17	2019.10.16
Dielectric Parameter Probe	DAKS-3.5	1042	2018.10.17	2019.10.16

Detailed information of Isotropic E-field Probe Type ES3DV3

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	Calibration certificate in Appendix C
Frequency	10 MHz to 4 GHz; Linearity: $\pm 0.2$ dB (30 MHz to 4 GHz)
Optical Surface Detection	$\pm 0.2$ mm repeatability in air and clear liquids over diffuse reflecting surfaces
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.0 mm
Dynamic Range	5 $\mu$ W/g to > 100 W/kg; Linearity: $\pm 0.2$ dB
Application	General dosimetry up to 4 GHz Dosimetry in strong gradient fields Compliance tests of mobile phones

Detailed information of Isotropic E-field Probe Type EX3DV4

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	Calibration certificate in Appendix C
Frequency	10 MHz to > 6 GHz Linearity: $\pm 0.2$ dB (30 MHz to 6 GHz)
Optical Surface Detection	$\pm 0.3$ mm repeatability in air and clear liquids over diffuse reflecting surfaces
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Dynamic Range	10 $\mu$ W/g to > 100 W/kg Linearity: $\pm 0.2$ dB (noise: typically < 1 $\mu$ W/g)
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.

According to KDB 865664 D01 section 3.2.2, instead of the typical annual calibration recommended by measurement standards, longer calibration intervals of up to three years may be considered when it is demonstrated that the **SAR target, impedance and return loss** of a dipole have remain stable according to the following requirements.

- 1) The test laboratory must ensure that the required supporting information and documentation are included in the SAR report to qualify for the three-year extended calibration interval; otherwise, the IEEE Std 1528-2013 recommended annual calibration applies.
- 2) Immediate re-calibration is required for the following conditions.
  - a) After a dipole is damaged and properly repaired to meet required specifications.
  - b) When the measured SAR deviates from the calibrated SAR value by more than 10% due to changes in physical, mechanical, electrical or other relevant dipole conditions; i.e., the error is not introduced by incorrect measurement procedures or other issues relating to the SAR measurement system.
  - c) When the most recent return-loss result, measured at least annually, deviates by more than 20% from the previous measurement (i.e. value in dB $\times$ 0.2) or not meeting the required 20 dB minimum return-loss requirement.
  - d) When the most recent measurement of the real or imaginary parts of the impedance, measured at least annually, deviates by more than 5  $\Omega$  from the previous measurement.

## Dipole 750

### SAR target

Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

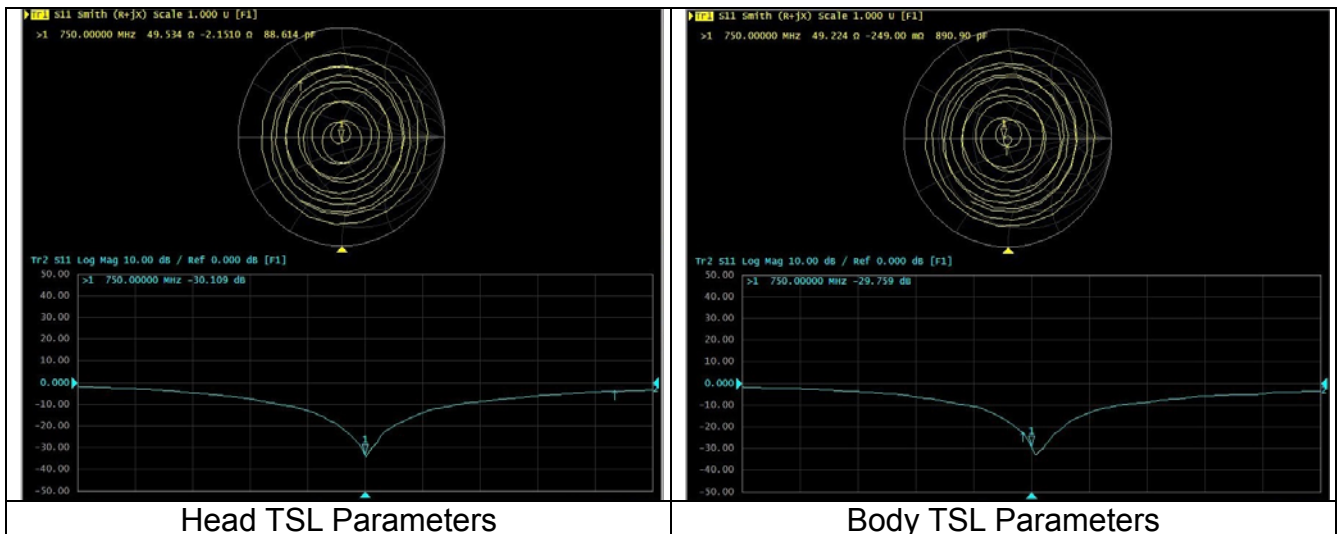
### Impedance and Return loss measured by Network analyzer

The most recent measurement of the real or imaginary parts of the impedance (measured on 2018.8.20), deviates within 5 Ω from the previous measurement. (Data from the last calibration report)

The most recent return-loss result (measured on 2018.8.20) deviates within 20% from the previous measurement. (Data from the last calibration report)

Head TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	53.9Ω+0.24jΩ	49.5Ω-2.15jΩ	<5Ω
Return loss	-28.4dB	-29.8dB	<20%

Body TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	52.0Ω-2.22jΩ	49.2Ω-0.25jΩ	<5Ω
Return loss	-30.6dB	-30.1dB	<20%



### Dipole 835

#### SAR target

Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

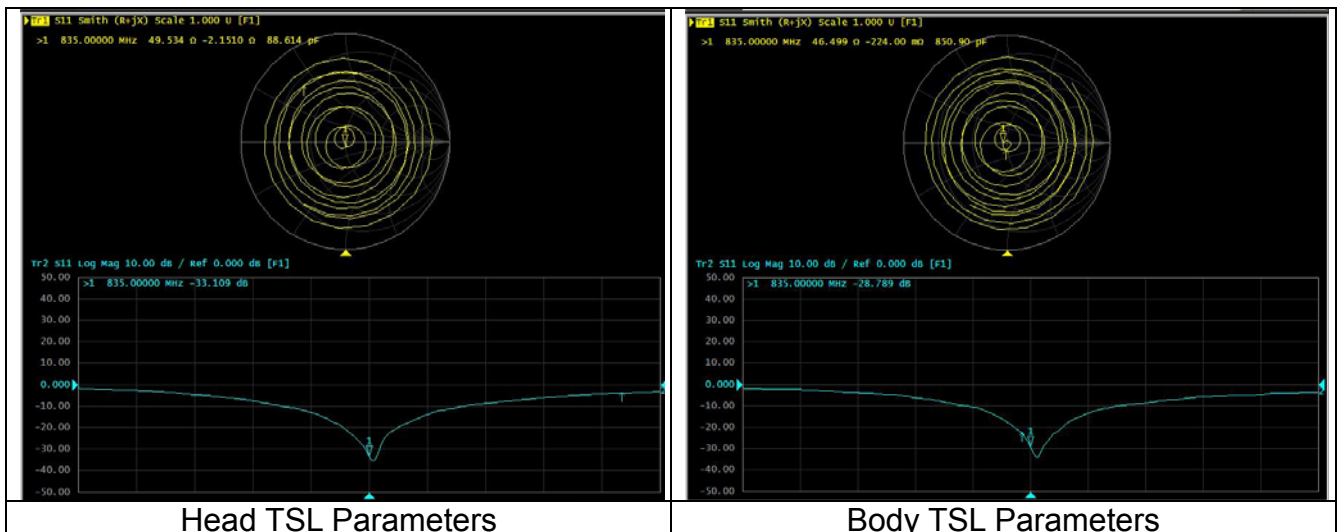
#### Impedance and Return loss measured by Network analyzer

The most recent measurement of the real or imaginary parts of the impedance (measured on 2018.8.20), deviates within 5 Ω from the previous measurement. (Data from the last calibration report)

The most recent return-loss result (measured on 2018.8.20) deviates within 20% from the previous measurement. (Data from the last calibration report)

Head TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	51.0Ω-2.79jΩ	49.5Ω-2.15jΩ	<5Ω
Return loss	-30.7 dB	-33.1 dB	<20%

Body TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	46.6Ω-3.61jΩ	49.5Ω-0.22jΩ	<5Ω
Return loss	-25.8dB	-28.8dB	<20%



## Dipole1800

### SAR target

Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

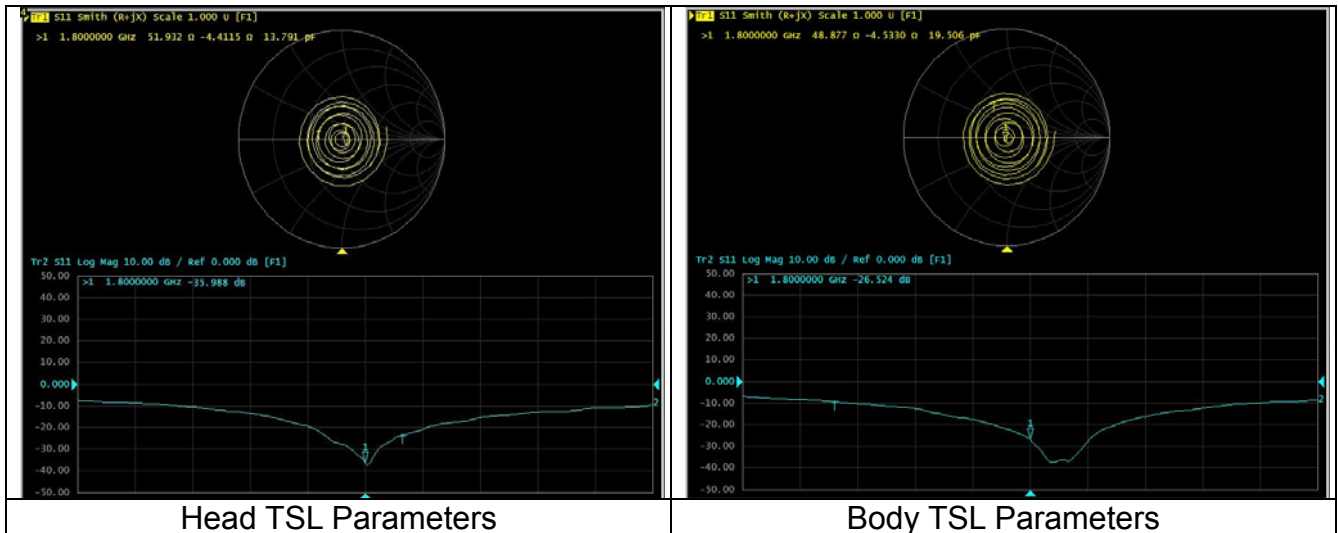
### Impedance and Return loss measured by Network analyzer

The most recent measurement of the real or imaginary parts of the impedance (measured on 2018.8.20), deviates within 5 Ω from the previous measurement. (Data from the last calibration report)

The most recent return-loss result (measured on 2018.8.20) deviates within 20% from the previous measurement. (Data from the last calibration report)

Head TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	49.3Ω-1.55jΩ	51.9Ω-4.41jΩ	<5Ω
Return loss	-35.4 dB	-36.0dB	<20%

Body TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	46.0Ω-1.32jΩ	48.9Ω-4.53jΩ	<5Ω
Return loss	-27.1dB	-26.5dB	<20%



## Dipole2000

### SAR target

Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

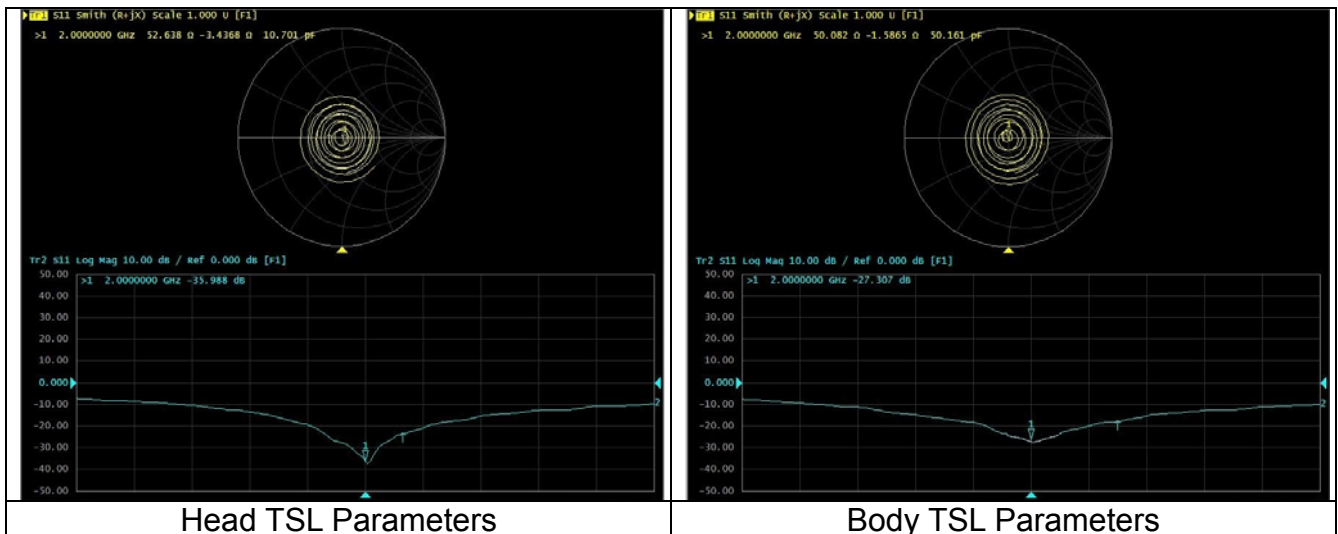
### Impedance and Return loss measured by Network analyzer

The most recent measurement of the real or imaginary parts of the impedance (measured on 2018.8.20), deviates within 5 Ω from the previous measurement. (Data from the last calibration report)

The most recent return-loss result (measured on 2018.8.20) deviates within 20% from the previous measurement. (Data from the last calibration report)

Head TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	49.8Ω-2.08jΩ	52.6Ω-3.44jΩ	<5Ω
Return loss	-33.6dB	-36.0dB	<20%

Body TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	46.3Ω-1.63jΩ	50.1Ω-1.59jΩ	<5Ω
Return loss	-27.6dB	-27.3dB	<20%





## Dipole2450

### SAR target

Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

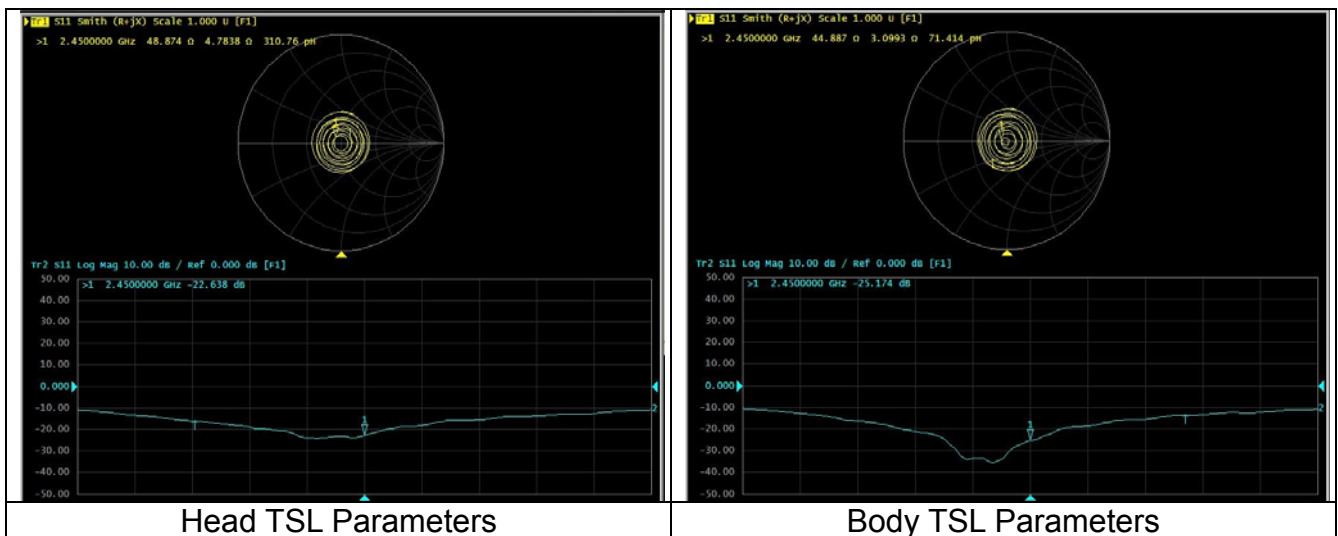
### Impedance and Return loss measured by Network analyzer

The most recent measurement of the real or imaginary parts of the impedance (measured on 2018.8.20), deviates within 5 Ω from the previous measurement. (Data from the last calibration report)

The most recent return-loss result (measured on 2018.8.20) deviates within 20% from the previous measurement. (Data from the last calibration report)

Head TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	51.3Ω+5.92jΩ	48.9Ω+4.78jΩ	<5Ω
Return loss	-24.5 dB	-22.6dB	<20%

Body TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	47.6Ω+6.39jΩ	44.9Ω+3.10jΩ	<5Ω
Return loss	-23.1dB	-25.2dB	<20%



### Dipole5GHz

#### SAR target

Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

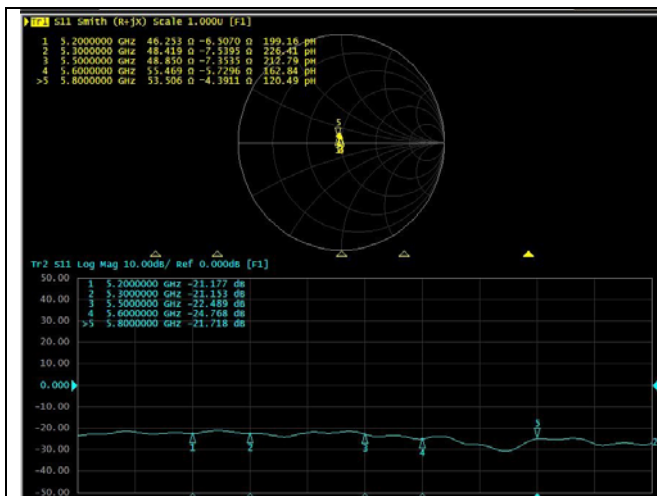
#### Impedance and Return loss measured by Network analyzer

The most recent measurement of the real or imaginary parts of the impedance (measured on 2018.8.20), deviates within 5 Ω from the previous measurement. (Data from the last calibration report)

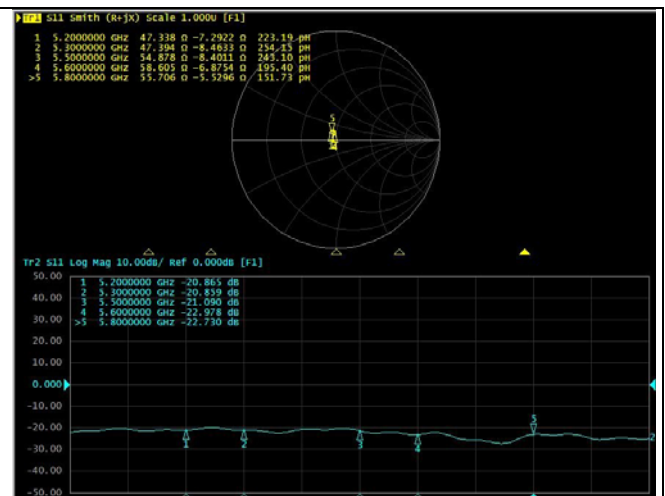
The most recent return-loss result (measured on 2018.8.20) deviates within 20% from the previous measurement. (Data from the last calibration report)

Head TSL Parameters				
Parameters	Target (Ref. Value)	Measured data	Deviation	Frequency (MHz)
Impedance	47.6Ω-8.77jΩ	46.3Ω-6.51jΩ	<5Ω	5200
Return loss	-20.7dB	-20.9dB	<20%	5200
Impedance	45.5Ω-6.82jΩ	48.4Ω-7.54jΩ	<5Ω	5300
Return loss	-21.4dB	-20.9dB	<20%	5300
Impedance	50.7Ω-7.14jΩ	48.9Ω-7.35jΩ	<5Ω	5500
Return loss	-23.0dB	-20.9dB	<20%	5500
Impedance	55.2Ω-4.00jΩ	55.5Ω-5.73jΩ	<5Ω	5600
Return loss	-24.1dB	-20.9dB	<20%	5600
Impedance	52.2Ω-8.20jΩ	53.5Ω-4.39jΩ	<5Ω	5800
Return loss	-21.6dB	-20.9dB	<20%	5800

Body TSL Parameters				
Parameters	Target (Ref. Value)	Measured data	Deviation	Frequency (MHz)
Impedance	50.8Ω-10.10jΩ	47.3Ω-7.29jΩ	<5Ω	5200
Return loss	-20.0dB	-20.9dB	<20%	5200
Impedance	48.5Ω-8.56jΩ	47.4Ω-8.46jΩ	<5Ω	5300
Return loss	-21.1dB	-20.9dB	<20%	5300
Impedance	54.9Ω-6.85jΩ	54.9Ω-8.40jΩ	<5Ω	5500
Return loss	-21.9dB	-21.1dB	<20%	5500
Impedance	56.6Ω-2.29jΩ	58.6Ω-6.88jΩ	<5Ω	5600
Return loss	-23.7dB	-23.0dB	<20%	5600
Impedance	56.7Ω-8.10jΩ	55.7Ω-5.53jΩ	<5Ω	5800
Return loss	-20.2dB	-22.7dB	<20%	5800



Head TSL Parameters



Body TSL Parameters

**ANNEX A – TEST PLOTS**

Please refer to the attachment.

**ANNEX B – RELEVANT PAGES FROM CALIBRATION REPORTS**

Please refer to the attachment.