

TEST REPORT FOR SAR TESTING

Report No.: SRTC2021-9004(F)-21082801(H)

Product Name: Smart Phone

Product Model: TA-1390

Applicant: HMD Global Oy

Manufacturer: HMD Global Oy

Specification: Part 2.1093

IEEE Std 1528

KDB Procedures

FCC ID: 2AJOTTA-1390

The State Radio_monitoring_center Testing Center (SRTC)

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1. GENERAL INFORMATION

1.1 Notes of the test report

The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written permission of The State Radio_monitoring_center Testing Center (SRTC).

The test results relate only to individual items of the samples which have been tested.

The certification and accreditation identifiers used in this report shall not be applicable to the tested or calibrated samples thereof. The manufacturer shall not mark the tested samples or items (or a separate part of the item) with the identifiers of certification and accreditation to mislead relevant parties about the tested samples or items.

1.2 Information about the testing laboratory

Company:	The State Radio_monitoring_center Testing Center (SRTC)
Address:	15 th Building, No.30 Shixing Street, Shijingshan District, Beijing P.R. China
City:	Beijing
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1.3 Applicant's details

Company:	HMD Global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland

1.4 Manufacturer's details

Company:	HMD Global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland

1.5 Test Environment

Date of Receipt of test sample at SRTC:	2021.08.18
Testing Start Date:	2021.08.18
Testing End Date:	2021.08.24

Environmental Data:	Temperature (°C)	Humidity (%)
Ambient	24	38

Normal Supply Voltage (Vdc.):	3.85
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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: GSM850/1900 <input checked="" type="checkbox"/> WCDMA Band: FDD II/IV/V <input checked="" type="checkbox"/> LTE Band: 2/4/5/7/12/13/17/25/26/38/41/66 <input checked="" type="checkbox"/> NR Band: 2/5/7/38/41/66/71/78 <input checked="" type="checkbox"/> Wi-Fi Band: 2.4GHz <input checked="" type="checkbox"/> Wi-Fi Band: 5GHz UNII-1/2A/2C/3 <input checked="" type="checkbox"/> Bluetooth/BLE
Mode	GSM <input checked="" type="checkbox"/> GPRS (GMSK) <input checked="" type="checkbox"/> EGPRS (GMSK/8PSK) WCDMA <input checked="" type="checkbox"/> UMTS Rel. 99 <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 <input checked="" type="checkbox"/> 802.11a <input checked="" type="checkbox"/> 802.11b <input checked="" type="checkbox"/> 802.11g <input checked="" type="checkbox"/> 802.11n HT20 <input checked="" type="checkbox"/> 802.11n HT40 <input checked="" type="checkbox"/> 802.11ac VHT20 <input checked="" type="checkbox"/> 802.11ac VHT40 <input checked="" type="checkbox"/> 802.11ac VHT80 LTE <input checked="" type="checkbox"/> QPSK <input checked="" type="checkbox"/> 16QAM <input checked="" type="checkbox"/> 64QAM <input checked="" type="checkbox"/> 256QAM NR <input checked="" type="checkbox"/> DFT-s-OFDM (PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM) <input checked="" type="checkbox"/> CP-OFDM (QPSK, 16QAM, 64QAM, 256QAM)
Duty Cycle*	GPRS EDGE(GMSK/8PSK): 12.5% (1 Slot), 25% (2 Slots), 37.5% (3 Slots), 50% (4 Slots) WCDMA: 100% LTE(FDD): 100% LTE(TDD): 63.3% maximum BT: DH5:76.9% 2DH5:63.47% 3DH5:77.07% BLE: 1M:62.9% BLE: 2M:33.33% WIFI2.4GHz: 11b:99.41% 11g:98.54% 11n 20:98.44% 11n 40:94.9% WIFI5GHz: 11a:98.18% 11n 20: 97.93% 11n 40: 96.88% 11ac 20:98.45% 11ac 40:96.91% 11ac 80:93.88%

Multi-Slot Class for GPRS/EDGE	<input type="checkbox"/> Class 8 - One Up <input type="checkbox"/> Class 10 - Two Up <input type="checkbox"/> Class 12 - Four Up <input checked="" 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
Note	For licensed cellular network duty cycle is inherent. For unlicensed network WLAN Duty cycle is depends on the data traffic, and the traffic allocation in operating mode could be the most conservative condition which with 100% duty cycle. SAR measurement also use non signalling mode, so the duty factor shall be taken into consideration.
H/W Version	V1.0
S/W Version	000T_0_315
IMEI	359196240005481 / 359196240005523 / 359196240005846

2.2 Support Equipment

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

Equipment	Battery
Manufacturer	Guangdong Fenghua New Energy Co., Ltd.
Model Number	P660
Equipment	Headset
Manufacturer	DongGuan LongTa Xin Electronics Co.,Ltd.
Model Number	LTX-LH021

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
KDB 447498 D01	v06	General RF Exposure Guidance
KDB 447498 D02	v02r01	SAR MEASUREMENT PROCEDURES FOR USB DONGLE TRANSMITTERS
KDB 648474 D04	v01r03	Handset SAR
KDB 941225 D01	v03r01	3G SAR Procedures
KDB 941225 D06	v02r01	Hotspot Mode SAR
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 616217 D04	v01r02	SAR for laptop and tablets

4. TEST CONDITIONS

4.1 Picture to demonstrate the required liquid depth

The liquid depth is large than 15cm in the used SAM phantoms in flat section, and the depth of the tissue simulant was 15.0 ± 0.5 cm measured from the ear reference point during system checking and device measurements.



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 ± 0.02 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.

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 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. All tests were carried out using simulants whose dielectric parameters were within $\pm 10\%$ below 3GHz and $\pm 5\%$ above 3GHz of the recommended values when use DASY system according to KDB865664D01. All tests were carried out within 24 hours of measuring the dielectric parameters.

Tissue Stimulant Recipes	
Name	Broadband tissue-equivalent liquid
Type	HBBL600-10000V6 Simulating Liquid
Note: The stimulant could be the same for head and body.	

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 Dasy system.



Device holder supplied by SPEAG

4.6.2 Test Exposure Conditions

4.6.2.1 Head Configuration

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 "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 normally determined according to the actual scene which might be the worst use condition for general exposure. The device's front and rear were oriented facing the phantom since these orientations give higher results for most regular portable devices.

4.6.2.3 Hotspot Configuration

Hotspot mode SAR is measured for all edges and surfaces of the device with a transmitting antenna located within 25 mm from that surface or edge; for the data modes, wireless technologies and frequency bands supporting hotspot mode.

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~4GHz) and 10mm x 10mm (from 4GHz~6GHz) measurement grid used when two staggered one-dimensional cubic splines are used to estimate the maximum SAR location.

When the reported 1g-SAR estimated by area scan is less than 1.40 w/kg.

Zoom scan was performed by using the configuration mentioned below or more conservative scan area and step 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.

Below 3GHz: 32mmX32mmX30mm scan area with 8 mm X8 mm X5 mm steps

2GHz-3GHz: 32mmX32mmX30mm scan area with 8 mm X8 mm X5 mm steps

3GHz-4GHz: 28mmX28mmX28mm scan area with 7 mm X7 mm X4 mm steps

4GHz-5GHz: 25mmX25mmX24mm scan area with 5 mm X5 mm X3 mm steps

5GHz-6GHz: 25mmX25mmX22mm scan area with 5 mm X5 mm X2 mm steps

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/Body-Worn/Hotspot exposure conditions 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.

Standalone Transmission Summary(1g- SAR)						
Exposure Position	Frequency Band	Reported SAR Result(W/kg)	Highest Reported SAR Result(W/kg)		Limit(W/kg)	Result
Head	GSM850	0.21	0.79	1.25	1.60	Pass
	GSM1900	0.55				
	WCDMA Band II	0.74				
	WCDMA Band IV	0.47				
	WCDMA Band V	0.20				
	LTE Band 2	0.20				
	LTE Band 4	0.33				
	LTE Band 5	0.22				
	LTE Band 7	<0.10				
	LTE Band 12	0.11				
	LTE Band 13	0.12				
	LTE Band 17	0.16				
	LTE Band 25	0.23				
	LTE Band 26	0.13				
	LTE Band 38	0.79				
	LTE Band 41	0.62				
	LTE Band 66	0.34				
	NR Band n2	0.46				
	NR Band n5	0.18				
	NR Band n7	0.54				
	NR Band n38	0.58				
	NR Band n41	0.54				
	NR Band n66	0.58				
NR Band n71	0.12					
NR Band n78	0.22					
WIFI 2.4G	0.38					
WIFI 5G	0.65					
Bluetooth	0.25					
Body-Worn (10mm Gap)	GSM850	0.42	0.96	1.25	1.60	Pass
	GSM1900	0.69				
	WCDMA Band II	0.90				
	WCDMA Band IV	0.86				
	WCDMA Band V	0.40				
	LTE Band 2	0.53				
	LTE Band 4	0.58				
	LTE Band 5	0.43				
	LTE Band 7	0.96				
	LTE Band 12	0.22				
	LTE Band 13	0.28				
	LTE Band 17	0.20				
	LTE Band 25	0.55				



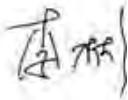
	LTE Band 26	0.42			
	LTE Band 38	0.46			
	LTE Band 41	0.36			
	LTE Band 66	0.55			
	NR Band n2	0.94			
	NR Band n5	0.36			
	NR Band n7	0.46			
	NR Band n38	0.17			
	NR Band n41	0.13			
	NR Band n66	0.95			
	NR Band n71	0.18			
	NR Band n78	0.22			
	WIFI 2.4G	0.23			
	WIFI 5G	0.21			
	Bluetooth	<0.10			
Hotspot (10mm Gap)	GSM850	0.63	1.25		
	GSM1900	0.94			
	WCDMA Band II	0.90			
	WCDMA Band IV	0.86			
	WCDMA Band V	0.40			
	LTE Band 2	0.44			
	LTE Band 4	0.58			
	LTE Band 5	0.43			
	LTE Band 7	1.25			
	LTE Band 12	0.22			
	LTE Band 13	0.28			
	LTE Band 17	0.20			
	LTE Band 25	0.55			
	LTE Band 26	0.42			
	LTE Band 38	0.71			
	LTE Band 41	0.55			
	LTE Band 66	0.52			
	NR Band n2	0.94			
	NR Band n5	0.36			
	NR Band n7	0.43			
	NR Band n38	0.33			
	NR Band n41	0.28			
	NR Band n66	0.95			
	NR Band n71	0.21			
	NR Band n78	0.33			
	WIFI 2.4G	0.37			
WIFI 5G	0.37				
	Bluetooth	<0.10			

Standalone Transmission Summary(10g- SAR)					
Exposure Position	Frequency Band	Reported SAR Result(W/kg)	Highest Reported SAR Result(W/kg)	Limit(W/kg)	Result
Limb	LTE Band 7	1.88	1.88	4.0	Pass
	WIFI 5G	1.35			

Simultaneous Transmission Summary

Simultaneous Transmission Summary(1g- SAR)				
Exposure Position	Reported SAR Result(W/kg)	Highest Reported SAR Result(W/kg)	Limit(W/kg)	Result
Head	1.42	1.44	1.60	pass
Body-Worn	1.44			
Hotspot	1.37			

Simultaneous Transmission Summary(10g- SAR)			
Exposure Position	Highest Reported SAR Result(W/kg)	Limit(W/kg)	Result
Limb	1.88	4.0	pass

This Test Report Is Issued by: Mr. Peng Zhen 	Checked by: Ms. Liu Jia 
Tested by: Mr. Li Bin 	Issued date: 20210903

6 TEST RESULT

6.1 Manufacturing Tolerance

GSM

GSM850

Carrier frequency (MHz)	Channel No.	Tune up Tolerance (dBm)
824.2	128	33.5
836.6	190	
848.8	251	

GPRS/EGPRS (GMSK):

Carrier frequency (MHz)	Channel No.	TX Mode	Tune up Tolerance (dBm)
824.2	128	4Downlink1uplink	33.5
836.6	190		
848.8	251		
824.2	128	3Downlink2uplink	32.0
836.6	190		
848.8	251		
824.2	128	2Downlink3uplink	30.0
836.6	190		
848.8	251		
824.2	128	1Downlink4uplink	27.5
836.6	190		
848.8	251		

EGPRS (8PSK):

Carrier frequency (MHz)	Channel No.	TX Mode	Tune up Tolerance (dBm)
824.2	128	8PSK 4Downlink1uplink	28.0
836.6	190		
848.8	251		
824.2	128	8PSK 3Downlink2uplink	27.0
836.6	190		
848.8	251		
824.2	128	8PSK 2Downlink3uplink	25.5
836.6	190		
848.8	251		
824.2	128	8PSK 1Downlink4uplink	23.0
836.6	190		
848.8	251		

PCS1900:

Carrier frequency (MHz)	Channel No.	Tune up Tolerance (dBm)	
		Receiver off	Receiver on
1850.2	512	30.5	26.0
1880.0	661		
1909.8	810		

GPRS/EGPRS (GMSK):

Carrier frequency (MHz)	Channel No.	TX Mode	Tune up Tolerance (dBm)	
			Receiver off	Receiver on
1850.2	512	4Downlink1uplink	30.5	26.0
1880.0	661			
1909.8	810			
1850.2	512	3Downlink2uplink	29.0	24.5
1880.0	661			
1909.8	810			
1850.2	512	2Downlink3uplink	27.0	22.5
1880.0	661			
1909.8	810			
1850.2	512	1Downlink4uplink	25.0	20.5
1880.0	661			
1909.8	810			

EGPRS (8PSK):

Carrier frequency (MHz)	Channel No.	TX Mode	Tune up Tolerance (dBm)	
			Receiver off	Receiver on
1850.2	512	8PSK 4Downlink1uplink	26.4	21.9
1880.0	661			
1909.8	810			
1850.2	512	8PSK 3Downlink2uplink	24.5	20.0
1880.0	661			
1909.8	810			
1850.2	512	8PSK 2Downlink3uplink	22.4	17.9
1880.0	661			
1909.8	810			
1850.2	512	8PSK 1Downlink4uplink	20.7	16.2
1880.0	661			
1909.8	810			

WCDMA

WCDMA band II

Mode		Carrier frequency (MHz)	Channel No.	Tune up Tolerance (dBm)	
				Receiver off	Receiver on
Release 99	RMC,12.2kbps	1852.4	9262	24.0	18.0
		1880.0	9400		
		1907.6	9538		
HSDPA	Subtest 1	1852.4	9262	22.7	16.7
		1880.0	9400		
		1907.6	9538		
	Subtest 2	1852.4	9262	22.6	16.6
		1880.0	9400		
		1907.6	9538		
	Subtest 3	1852.4	9262	22.0	16.0
		1880.0	9400		
		1907.6	9538		
	Subtest 4	1852.4	9262	22.3	16.3
		1880.0	9400		
		1907.6	9538		
HSUPA	Subtest 1	1852.4	9262	22.6	16.6
		1880.0	9400		
		1907.6	9538		
	Subtest 2	1852.4	9262	20.6	14.6
		1880.0	9400		
		1907.6	9538		
	Subtest 3	1852.4	9262	21.6	15.6
		1880.0	9400		
		1907.6	9538		
	Subtest 4	1852.4	9262	20.5	14.5
		1880.0	9400		
		1907.6	9538		
	Subtest 5	1852.4	9262	22.7	16.7
		1880.0	9400		
		1907.6	9538		
DC-HSDPA	Subtest 1	1852.4	9262	23.0	17.0
		1880.0	9400		
		1907.6	9538		
	Subtest 2	1852.4	9262	23.0	17.0
		1880.0	9400		
		1907.6	9538		
	Subtest 3	1852.4	9262	23.0	17.0
		1880.0	9400		
		1907.6	9538		
	Subtest 4	1852.4	9262	23.0	17.0
		1880.0	9400		
		1907.6	9538		
HSPA+	16QAM	1852.4	9262	22.8	16.8
		1880.0	9400		
		1907.6	9538		

WCDMA band IV

Mode		Carrier frequency (MHz)	Channel No.	Tune up Tolerance (dBm)	
				Receiver off	Receiver on
Release 99	RMC,12.2kbps	1712.4	1312	24.0	18.0
		1732.4	1412		
		1752.6	1513		
HSDPA	Subtest 1	1712.4	1312	22.7	16.7
		1732.4	1412		
		1752.6	1513		
	Subtest 2	1712.4	1312	22.6	16.6
		1732.4	1412		
		1752.6	1513		
	Subtest 3	1712.4	1312	22.0	16.0
		1732.4	1412		
		1752.6	1513		
	Subtest 4	1712.4	1312	22.3	16.3
		1732.4	1412		
		1752.6	1513		
HSUPA	Subtest 1	1712.4	1312	22.6	16.6
		1732.4	1412		
		1752.6	1513		
	Subtest 2	1712.4	1312	20.6	14.6
		1732.4	1412		
		1752.6	1513		
	Subtest 3	1712.4	1312	21.6	15.6
		1732.4	1412		
		1752.6	1513		
	Subtest 4	1712.4	1312	20.5	14.5
		1732.4	1412		
		1752.6	1513		
	Subtest 5	1712.4	1312	22.7	16.7
		1732.4	1412		
		1752.6	1513		
DC-HSDPA	Subtest 1	1712.4	1312	23.0	17.0
		1732.4	1412		
		1752.6	1513		
	Subtest 2	1712.4	1312	23.0	17.0
		1732.4	1412		
		1752.6	1513		
	Subtest 3	1712.4	1312	23.0	17.0
		1732.4	1412		
		1752.6	1513		
	Subtest 4	1712.4	1312	23.0	17.0
		1732.4	1412		
		1752.6	1513		
HSPA+	16QAM	1712.4	1312	22.8	16.8
		1732.4	1412		
		1752.6	1513		

WCDMA band V

Mode		Carrier frequency (MHz)	Channel No.	RF Power Output (dBm)
Release 99	RMC,12.2kbps	826.4	4132	24.0
		836.4	4182	
		846.6	4233	
HSDPA	Subtest 1	826.4	4132	23.5
		836.4	4182	
		846.6	4233	
	Subtest 2	826.4	4132	23.5
		836.4	4182	
		846.6	4233	
	Subtest 3	826.4	4132	23.0
		836.4	4182	
		846.6	4233	
	Subtest 4	826.4	4132	23.0
		836.4	4182	
		846.6	4233	
HSUPA	Subtest 1	826.4	4132	22.5
		836.4	4182	
		846.6	4233	
	Subtest 2	826.4	4132	21.5
		836.4	4182	
		846.6	4233	
	Subtest 3	826.4	4132	22.0
		836.4	4182	
		846.6	4233	
	Subtest 4	826.4	4132	21.5
		836.4	4182	
		846.6	4233	
	Subtest 5	826.4	4132	22.8
		836.4	4182	
		846.6	4233	
DC-HSDPA	Subtest 1	826.4	4132	23.0
		836.4	4182	
		846.6	4233	
	Subtest 2	826.4	4132	23.0
		836.4	4182	
		846.6	4233	
	Subtest 3	826.4	4132	23.0
		836.4	4182	
		846.6	4233	
	Subtest 4	826.4	4132	23.0
		836.4	4182	
		846.6	4233	
HSPA+	16QAM	826.4	4132	22.8
		836.4	4182	
		846.6	4233	

LTE

Note: RB allocation mentioned below is for all Bandwidths, and the Frequency Range are divided to 3 ranges (Low, Mid, High), and for LTE Band 41 the Frequency Range are divided to 5 ranges (Low1, Low2, Mid, High1, High2)

Band 2

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	QPSK	1	Low	24.0
			Mid	
			High	
		50%	Low	23.0
			Mid	
			High	
		100%	Low	23.0
			Mid	
			High	
	16QAM	1	Low	23.0
			Mid	
			High	
		50%	Low	22.0
			Mid	
			High	
		100%	Low	22.0
			Mid	
			High	
	64QAM	1	Low	22.0
			Mid	
			High	
		50%	Low	21.0
			Mid	
			High	
100%		Low	21.0	
		Mid		
		High		
256QAM	1	Low	19.0	
		Mid		
		High		
	50%	Low	19.0	
		Mid		
		High		
	100%	Low	19.0	
		Mid		
		High		

Band 2(EN_DC)

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	QPSK	1	Low	22.0
			Mid	
			High	
		50%	Low	21.0
			Mid	
			High	
		100%	Low	21.0
			Mid	
			High	
	16QAM	1	Low	21.0
			Mid	
			High	
		50%	Low	20.0
			Mid	
			High	
		100%	Low	20.0
			Mid	
			High	
	64QAM	1	Low	20.0
			Mid	
			High	
		50%	Low	19.0
			Mid	
			High	
100%		Low	19.0	
		Mid		
		High		
256QAM	1	Low	17.0	
		Mid		
		High		
	50%	Low	17.0	
		Mid		
		High		
	100%	Low	17.0	
		Mid		
		High		

Band 4

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	QPSK	1	Low	24.0
			Mid	
			High	
		50%	Low	23.0
			Mid	
			High	
		100%	Low	23.0
			Mid	
			High	
	16QAM	1	Low	23.0
			Mid	
			High	
		50%	Low	22.0
			Mid	
			High	
		100%	Low	22.0
			Mid	
			High	
	64QAM	1	Low	22.0
			Mid	
			High	
		50%	Low	21.0
			Mid	
			High	
100%		Low	21.0	
		Mid		
		High		
256QAM	1	Low	19.0	
		Mid		
		High		
	50%	Low	19.0	
		Mid		
		High		
	100%	Low	19.0	
		Mid		
		High		

Band 4(EN_DC)

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	QPSK	1	Low	22.0
			Mid	
			High	
		50%	Low	21.0
			Mid	
			High	
		100%	Low	21.0
			Mid	
			High	
	16QAM	1	Low	21.0
			Mid	
			High	
		50%	Low	20.0
			Mid	
			High	
		100%	Low	20.0
			Mid	
			High	
	64QAM	1	Low	20.0
			Mid	
			High	
		50%	Low	19.0
			Mid	
			High	
100%		Low	19.0	
		Mid		
		High		
256QAM	1	Low	17.0	
		Mid		
		High		
	50%	Low	17.0	
		Mid		
		High		
	100%	Low	17.0	
		Mid		
		High		

Band 5

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	QPSK	1	Low	24.0
			Mid	
			High	
		50%	Low	23.0
			Mid	
			High	
		100%	Low	23.0
			Mid	
			High	
	16QAM	1	Low	23.0
			Mid	
			High	
		50%	Low	22.0
			Mid	
			High	
		100%	Low	22.0
			Mid	
			High	
	64QAM	1	Low	22.0
			Mid	
			High	
		50%	Low	21.0
			Mid	
			High	
100%		Low	21.0	
		Mid		
		High		
256QAM	1	Low	19.0	
		Mid		
		High		
	50%	Low	19.0	
		Mid		
		High		
	100%	Low	19.0	
		Mid		
		High		

Band 5(EN_DC)

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	QPSK	1	Low	22.0
			Mid	
			High	
		50%	Low	21.0
			Mid	
			High	
		100%	Low	21.0
			Mid	
			High	
	16QAM	1	Low	21.0
			Mid	
			High	
		50%	Low	20.0
			Mid	
			High	
		100%	Low	20.0
			Mid	
			High	
	64QAM	1	Low	20.0
			Mid	
			High	
		50%	Low	19.0
			Mid	
			High	
100%		Low	19.0	
		Mid		
		High		
256QAM	1	Low	17.0	
		Mid		
		High		
	50%	Low	17.0	
		Mid		
		High		
	100%	Low	17.0	
		Mid		
		High		

Band 7

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)	
				Full power	Hotspot on
All Bandwidth	QPSK	1	Low	24.0	22.0
			Mid		
			High		
		50%	Low	23.0	21.0
			Mid		
			High		
		100%	Low	23.0	21.0
			Mid		
			High		
	16QAM	1	Low	23.0	21.0
			Mid		
			High		
		50%	Low	22.0	20.0
			Mid		
			High		
		100%	Low	22.0	20.0
			Mid		
			High		
	64QAM	1	Low	22.0	20.0
			Mid		
			High		
		50%	Low	21.0	19.0
			Mid		
			High		
100%		Low	21.0	19.0	
		Mid			
		High			
256QAM	1	Low	19.0	17.0	
		Mid			
		High			
	50%	Low	19.0	17.0	
		Mid			
		High			
	100%	Low	19.0	17.0	
		Mid			
		High			

Band 7(EN_DC)

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)	
				Full power	Hotspot on
All Bandwidth	QPSK	1	Low	22.0	19.0
			Mid		
			High		
		50%	Low	21.0	18.0
			Mid		
			High		
		100%	Low	21.0	18.0
			Mid		
			High		
	16QAM	1	Low	21.0	18.0
			Mid		
			High		
		50%	Low	20.0	17.0
			Mid		
			High		
		100%	Low	20.0	17.0
			Mid		
			High		
	64QAM	1	Low	20.0	17.0
			Mid		
			High		
		50%	Low	19.0	16.0
			Mid		
			High		
100%		Low	19.0	16.0	
		Mid			
		High			
256QAM	1	Low	17.0	14.0	
		Mid			
		High			
	50%	Low	17.0	14.0	
		Mid			
		High			
	100%	Low	17.0	14.0	
		Mid			
		High			

Band 12

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	QPSK	1	Low	24.0
			Mid	
			High	
		50%	Low	23.0
			Mid	
			High	
		100%	Low	23.0
			Mid	
			High	
	16QAM	1	Low	23.0
			Mid	
			High	
		50%	Low	22.0
			Mid	
			High	
		100%	Low	22.0
			Mid	
			High	
	64QAM	1	Low	22.0
			Mid	
			High	
		50%	Low	21.0
			Mid	
			High	
100%		Low	21.0	
		Mid		
		High		
256QAM	1	Low	19.0	
		Mid		
		High		
	50%	Low	19.0	
		Mid		
		High		
	100%	Low	19.0	
		Mid		
		High		

Band 12(EN_DC)

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	QPSK	1	Low	22.0
			Mid	
			High	
		50%	Low	21.0
			Mid	
			High	
		100%	Low	21.0
			Mid	
			High	
	16QAM	1	Low	21.0
			Mid	
			High	
		50%	Low	20.0
			Mid	
			High	
		100%	Low	20.0
			Mid	
			High	
	64QAM	1	Low	20.0
			Mid	
			High	
		50%	Low	19.0
			Mid	
			High	
100%		Low	19.0	
		Mid		
		High		
256QAM	1	Low	17.0	
		Mid		
		High		
	50%	Low	17.0	
		Mid		
		High		
	100%	Low	17.0	
		Mid		
		High		

Band 13

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	QPSK	1	Low	24.0
			Mid	
			High	
		50%	Low	23.0
			Mid	
			High	
		100%	Low	23.0
			Mid	
			High	
	16QAM	1	Low	23.0
			Mid	
			High	
		50%	Low	22.0
			Mid	
			High	
		100%	Low	22.0
			Mid	
			High	
	64QAM	1	Low	22.0
			Mid	
			High	
		50%	Low	21.0
			Mid	
			High	
100%		Low	21.0	
		Mid		
		High		
256QAM	1	Low	19.0	
		Mid		
		High		
	50%	Low	19.0	
		Mid		
		High		
	100%	Low	19.0	
		Mid		
		High		

Band 13(EN_DC)

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	QPSK	1	Low	22.0
			Mid	
			High	
		50%	Low	21.0
			Mid	
			High	
		100%	Low	21.0
			Mid	
			High	
	16QAM	1	Low	21.0
			Mid	
			High	
		50%	Low	20.0
			Mid	
			High	
		100%	Low	20.0
			Mid	
			High	
	64QAM	1	Low	20.0
			Mid	
			High	
		50%	Low	19.0
			Mid	
			High	
100%		Low	19.0	
		Mid		
		High		
256QAM	1	Low	17.0	
		Mid		
		High		
	50%	Low	17.0	
		Mid		
		High		
	100%	Low	17.0	
		Mid		
		High		

Band 17

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	QPSK	1	Low	24.0
			Mid	
			High	
		50%	Low	23.0
			Mid	
			High	
		100%	Low	23.0
			Mid	
			High	
	16QAM	1	Low	23.0
			Mid	
			High	
		50%	Low	22.0
			Mid	
			High	
		100%	Low	22.0
			Mid	
			High	
	64QAM	1	Low	22.0
			Mid	
			High	
		50%	Low	21.0
			Mid	
			High	
		100%	Low	21.0
			Mid	
			High	
256QAM	1	Low	19.0	
		Mid		
		High		
	50%	Low	19.0	
		Mid		
		High		
	100%	Low	19.0	
		Mid		
		High		

Band 25

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	QPSK	1	Low	24.0
			Mid	
			High	
		50%	Low	23.0
			Mid	
			High	
		100%	Low	23.0
			Mid	
			High	
	16QAM	1	Low	23.0
			Mid	
			High	
		50%	Low	22.0
			Mid	
			High	
		100%	Low	22.0
			Mid	
			High	
	64QAM	1	Low	22.0
			Mid	
			High	
		50%	Low	21.0
			Mid	
			High	
100%		Low	21.0	
		Mid		
		High		
256QAM	1	Low	19.0	
		Mid		
		High		
	50%	Low	19.0	
		Mid		
		High		
	100%	Low	19.0	
		Mid		
		High		

Band 26

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	QPSK	1	Low	24.0
			Mid	
			High	
		50%	Low	23.0
			Mid	
			High	
		100%	Low	23.0
			Mid	
			High	
	16QAM	1	Low	23.0
			Mid	
			High	
		50%	Low	22.0
			Mid	
			High	
		100%	Low	22.0
			Mid	
			High	
	64QAM	1	Low	22.0
			Mid	
			High	
		50%	Low	21.0
			Mid	
			High	
100%		Low	21.0	
		Mid		
		High		
256QAM	1	Low	19.0	
		Mid		
		High		
	50%	Low	19.0	
		Mid		
		High		
	100%	Low	19.0	
		Mid		
		High		

Band 38

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)	
				Receiver off	Receiver on
All Bandwidth	QPSK	1	Low	24.0	20.0
			Mid		
			High		
		50%	Low	23.0	19.0
			Mid		
			High		
		100%	Low	23.0	19.0
			Mid		
			High		
	16QAM	1	Low	23.0	19.0
			Mid		
			High		
		50%	Low	22.0	18.0
			Mid		
			High		
		100%	Low	22.0	18.0
			Mid		
			High		
	64QAM	1	Low	22.0	18.0
			Mid		
			High		
		50%	Low	21.0	17.0
			Mid		
			High		
100%		Low	21.0	17.0	
		Mid			
		High			
256QAM	1	Low	19.0	15.0	
		Mid			
		High			
	50%	Low	19.0	15.0	
		Mid			
		High			
	100%	Low	19.0	15.0	
		Mid			
		High			

Band 41

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)	
				Receiver off	Receiver on
All Bandwidth	QPSK	1	Low	24.0	20.0
			Mid		
			High		
		50%	Low	23.0	19.0
			Mid		
			High		
		100%	Low	23.0	19.0
			Mid		
			High		
	16QAM	1	Low	23.0	19.0
			Mid		
			High		
		50%	Low	22.0	18.0
			Mid		
			High		
		100%	Low	22.0	18.0
			Mid		
			High		
	64QAM	1	Low	22.0	18.0
			Mid		
			High		
		50%	Low	21.0	17.0
			Mid		
			High		
100%		Low	21.0	17.0	
		Mid			
		High			
256QAM	1	Low	19.0	15.0	
		Mid			
		High			
	50%	Low	19.0	15.0	
		Mid			
		High			
	100%	Low	19.0	15.0	
		Mid			
		High			

Band 66

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	QPSK	1	Low	24.0
			Mid	
			High	
		50%	Low	23.0
			Mid	
			High	
		100%	Low	23.0
			Mid	
			High	
	16QAM	1	Low	23.0
			Mid	
			High	
		50%	Low	22.0
			Mid	
			High	
		100%	Low	22.0
			Mid	
			High	
	64QAM	1	Low	22.0
			Mid	
			High	
		50%	Low	21.0
			Mid	
			High	
100%		Low	21.0	
		Mid		
		High		
256QAM	1	Low	19.0	
		Mid		
		High		
	50%	Low	19.0	
		Mid		
		High		
	100%	Low	19.0	
		Mid		
		High		

Band 66(EN_DC)

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	QPSK	1	Low	22.0
			Mid	
			High	
		50%	Low	21.0
			Mid	
			High	
		100%	Low	21.0
			Mid	
			High	
	16QAM	1	Low	21.0
			Mid	
			High	
		50%	Low	20.0
			Mid	
			High	
		100%	Low	20.0
			Mid	
			High	
	64QAM	1	Low	20.0
			Mid	
			High	
		50%	Low	19.0
			Mid	
			High	
100%		Low	19.0	
		Mid		
		High		
256QAM	1	Low	17.0	
		Mid		
		High		
	50%	Low	17.0	
		Mid		
		High		
	100%	Low	17.0	
		Mid		
		High		

5G NR

N2

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)		
				Full power	Receiver on	Hotspot on& Sensor on
All Bandwidth	DFT-s-OFDM PI/2 BPSK	1	Low	23.5	17.5	22.5
			Mid			
			High			
		50%	Low	23.5	17.5	22.5
			Mid			
			High			
		100%	Low	22.5	17.5	22.5
			Mid			
			High			
	DFT-s-OFDM QPSK	1	Low	23.5	17.5	22.5
			Mid			
			High			
		50%	Low	23.5	17.5	22.5
			Mid			
			High			
		100%	Low	22.5	17.5	22.5
			Mid			
			High			
	DFT-s-OFDM 16QAM	1	Low	22.5	17.5	22.5
			Mid			
			High			
	DFT-s-OFDM 64QAM	1	Low	21.0	17.5	21.0
			Mid			
			High			
DFT-s-OFDM 256QAM	1	Low	19.0	17.5	19.0	
		Mid				
		High				
CP-OFDM QPSK	1	Low	22.0	17.5	22.0	
		Mid				
		High				

N5

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	DFT-s-OFDM PI/2 BPSK	1	Low	24.0
			Mid	
			High	
		50%	Low	24.0
			Mid	
			High	
	100%	Low	23.0	
		Mid		
		High		
	DFT-s-OFDM QPSK	1	Low	24.0
			Mid	
			High	
		50%	Low	24.0
			Mid	
			High	
	100%	Low	23.0	
		Mid		
		High		
	DFT-s-OFDM 16QAM	1	Low	23.0
			Mid	
			High	
	DFT-s-OFDM 64QAM	1	Low	21.5
			Mid	
			High	
DFT-s-OFDM 256QAM	1	Low	19.5	
		Mid		
		High		
CP-OFDM QPSK	1	Low	22.5	
		Mid		
		High		

N7

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)		
				Full power	Receiver on	Hotspot on& Sensor on
All Bandwidth	DFT-s-OFDM PI/2 BPSK	1	Low	23.5	19.0	21.5
			Mid			
			High			
		50%	Low	23.5	19.0	21.5
			Mid			
			High			
		100%	Low	22.5	19.0	21.5
			Mid			
			High			
	DFT-s-OFDM QPSK	1	Low	23.5	19.0	21.5
			Mid			
			High			
		50%	Low	23.5	19.0	21.5
			Mid			
			High			
		100%	Low	22.5	19.0	21.5
			Mid			
			High			
	DFT-s-OFDM 16QAM	1	Low	22.5	19.0	21.5
			Mid			
			High			
	DFT-s-OFDM 64QAM	1	Low	21.0	19.0	21.0
			Mid			
			High			
DFT-s-OFDM 256QAM	1	Low	19.0	19.0	19.0	
		Mid				
		High				
CP-OFDM QPSK	1	Low	22.0	19.0	21.5	
		Mid				
		High				

N38

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	DFT-s-OFDM PI/2 BPSK	1	Low	23.5
			Mid	
			High	
		50%	Low	23.5
			Mid	
			High	
	100%	Low	22.5	
		Mid		
		High		
	DFT-s-OFDM QPSK	1	Low	23.5
			Mid	
			High	
		50%	Low	23.5
			Mid	
			High	
	100%	Low	22.5	
		Mid		
		High		
	DFT-s-OFDM 16QAM	1	Low	22.5
			Mid	
			High	
	DFT-s-OFDM 64QAM	1	Low	21.0
			Mid	
			High	
DFT-s-OFDM 256QAM	1	Low	19.0	
		Mid		
		High		
CP-OFDM QPSK	1	Low	22.0	
		Mid		
		High		

N41

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	DFT-s-OFDM PI/2 BPSK	1	Low	23.5
			Mid	
			High	
		50%	Low	23.5
			Mid	
			High	
	100%	Low	22.5	
		Mid		
		High		
	DFT-s-OFDM QPSK	1	Low	23.5
			Mid	
			High	
		50%	Low	23.5
			Mid	
			High	
	100%	Low	22.5	
		Mid		
		High		
	DFT-s-OFDM 16QAM	1	Low	22.5
			Mid	
			High	
	DFT-s-OFDM 64QAM	1	Low	21.0
			Mid	
			High	
DFT-s-OFDM 256QAM	1	Low	19.0	
		Mid		
		High		
CP-OFDM QPSK	1	Low	22.0	
		Mid		
		High		

N66

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)		
				Full power	Receiver on	Hotspot on& Sensor on
All Bandwidth	DFT-s-OFDM PI/2 BPSK	1	Low	23.5	19.5	22.5
			Mid			
			High			
		50%	Low	23.5	19.5	22.5
			Mid			
			High			
		100%	Low	22.5	19.5	22.5
			Mid			
			High			
	DFT-s-OFDM QPSK	1	Low	23.5	19.5	22.5
			Mid			
			High			
		50%	Low	23.5	19.5	22.5
			Mid			
			High			
		100%	Low	22.5	19.5	22.5
			Mid			
			High			
	DFT-s-OFDM 16QAM	1	Low	22.5	19.5	22.5
			Mid			
			High			
	DFT-s-OFDM 64QAM	1	Low	21.0	19.5	21.0
			Mid			
			High			
DFT-s-OFDM 256QAM	1	Low	19.0	19.0	19.0	
		Mid				
		High				
CP-OFDM QPSK	1	Low	22.0	19.5	22.0	
		Mid				
		High				

N71

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)
All Bandwidth	DFT-s-OFDM PI/2 BPSK	1	Low	24.0
			Mid	
			High	
		50%	Low	24.0
			Mid	
			High	
		100%	Low	23.0
			Mid	
			High	
	DFT-s-OFDM QPSK	1	Low	24.0
			Mid	
			High	
		50%	Low	24.0
			Mid	
			High	
		100%	Low	23.0
			Mid	
			High	
	DFT-s-OFDM 16QAM	1	Low	23.0
			Mid	
			High	
	DFT-s-OFDM 64QAM	1	Low	21.5
			Mid	
			High	
DFT-s-OFDM 256QAM	1	Low	19.5	
		Mid		
		High		
CP-OFDM QPSK	1	Low	22.5	
		Mid		
		High		

N78(Class 2)

BW	Modulation	RB allocation with different offset	Frequency range	Tune up Tolerance (dBm)	
				Full power	Receiver on
All Bandwidth	DFT-s-OFDM PI/2 BPSK	1	Low	26.0	23.0
			Mid		
			High		
		50%	Low	26.0	23.0
			Mid		
			High		
		100%	Low	25.0	23.0
			Mid		
			High		
	DFT-s-OFDM QPSK	1	Low	26.0	23.0
			Mid		
			High		
		50%	Low	26.0	23.0
			Mid		
			High		
		100%	Low	25.0	23.0
			Mid		
			High		
	DFT-s-OFDM 16QAM	1	Low	25.0	23.0
			Mid		
			High		
	DFT-s-OFDM 64QAM	1	Low	23.5	23.0
			Mid		
			High		
DFT-s-OFDM 256QAM	1	Low	21.5	21.5	
		Mid			
		High			
CP-OFDM QPSK	1	Low	24.5	23.0	
		Mid			
		High			

Bluetooth

Modulation type	Tune up Tolerance (dBm)		
	2402MHz(Ch0)	2441MHz(Ch39)	2480MHz(Ch78)
GFSK	13.0		
$\pi/4$ DQPSK	10.0		
8DPSK	10.0		

Bluetooth (BLE)

Modulation type	Tune up Tolerance (dBm)		
	2402MHz (Ch0)	2440MHz (Ch19)	2480MHz (Ch39)
GFSK (LE 1Mbps)	7.5		
GFSK (LE 2Mbps)	7.5		

WLAN 2.4GHz

Modulation type	Tune up Tolerance (dBm)					
	Receiver off			Receiver on		
	2412MHz	2437MHz	2462MHz	2412MHz	2437MHz	2462MHz
802.11b	19.0	19.0	19.0	16.0	16.0	16.0
802.11g	18.0	18.0	18.0	15.0	15.0	15.0
802.11n HT20	18.0	18.0	18.0	15.0	15.0	15.0
802.11n HT40	17.0	17.0	17.0	14.0	14.0	14.0

WLAN 5GHz U-NII-1

Mode	Freq (MHz)	Tune up Tolerance (dBm)	
		Receiver off	Receiver on
802.11a	5180	18.0	15.0
	5200		
	5220		
	5240		
802.11n20M	5180	18.0	15.0
	5200		
	5220		
	5240		
802.11n40M	5190	17.0	14.0
	5230		
802.11ac20M	5180	17.0	14.0
	5200		
	5220		
	5240		
802.11ac40M	5190	17.0	14.0
	5230		
802.11ac80M	5210	17.0	14.0

WLAN 5GHz U-NII-2A

Mode	Freq (MHz)	Tune up Tolerance (dBm)	
		Receiver off	Receiver on
802.11a	5260	18.0	15.0
	5280		
	5300		
	5320		
802.11n20M	5260	18.0	15.0
	5280		
	5300		
	5320		
802.11n40M	5270	17.0	14.0
	5310		
802.11ac20M	5260	17.0	14.0
	5280		
	5300		
	5320		
802.11ac40M	5270	17.0	14.0
	5310		
802.11ac80M	5290	17.0	14.0

WLAN 5GHz U-NII-2C

Mode	Freq (MHz)	Tune up Tolerance (dBm)	
		Receiver off	Receiver on
802.11a	5500	18.0	15.0
	5520		
	5540		
	5560		
	5580		
	5600		
	5620		
	5640		
	5660		
	5680		
	5700		
802.11n20M	5500	18.0	15.0
	5520		
	5540		
	5560		
	5580		
	5600		
	5620		
	5640		
	5660		
	5680		
	5700		
802.11n40M	5510	17.0	14.0
	5550		
	5590		
	5630		
	5670		
	5710		
802.11ac20M	5500	17.0	14.0
	5520		
	5540		
	5560		
	5580		

	5600		
	5620		
	5640		
	5660		
	5680		
	5700		
	5720		
802.11ac40M	5510	17.0	14.0
	5550		
	5590		
	5630		
	5670		
	5710		
802.11ac80M	5530	17.0	14.0
	5610		
	5690		

WLAN 5GHz U-NII-3

Mode	Freq (MHz)	Tune up Tolerance (dBm)	
		Receiver off	Receiver on
802.11a	5745	18.0	15.0
	5765		
	5785		
	5805		
	5825		
802.11n20M	5745	18.0	15.0
	5765		
	5785		
	5805		
	5825		
802.11n40M	5755	17.0	14.0
	5795		
802.11ac20M	5745	17.0	14.0
	5765		
	5785		
	5805		
	5825		
802.11ac40M	5755	17.0	14.0
	5795		
802.11ac80M	5775	17.0	14.0

6.2 GSM Measurement result

GSM850

GSM Measured Power:

Carrier frequency (MHz)	Channel No.	RF Power Output (dBm)	Frame average power(dBm)
824.2	128	32.63	23.44
836.6	190	32.69	23.50
848.8	251	32.81	23.62

GPRS/EGPRS (GMSK) Measured Power:

Carrier frequency (MHz)	Channel No.	TX Mode	RF Power Output (dBm)	Frame average power(dBm)
824.2	128	4Downlink1uplink	32.48	23.29
836.6	190		32.66	23.47
848.8	251		32.73	23.54
824.2	128	3Downlink2uplink	30.84	24.66
836.6	190		30.94	24.76
848.8	251		30.96	24.78
824.2	128	2Downlink3uplink	28.83	24.41
836.6	190		28.83	24.41
848.8	251		28.80	24.38
824.2	128	1Downlink4uplink	26.25	23.08
836.6	190		26.19	23.02
848.8	251		26.13	22.96

EGPRS (8PSK) Measured Power:

Carrier frequency (MHz)	Channel No.	TX Mode	RF Power Output (dBm)	Frame average power(dBm)
824.2	128	8PSK 4Downlink1uplink	26.02	16.83
836.6	190		26.41	17.22
848.8	251		26.51	17.32
824.2	128	8PSK 3Downlink2uplink	25.92	19.74
836.6	190		26.01	19.83
848.8	251		26.45	20.27
824.2	128	8PSK 2Downlink3uplink	23.96	19.54
836.6	190		24.58	20.16
848.8	251		24.70	20.28
824.2	128	8PSK 1Downlink4uplink	22.24	19.07
836.6	190		22.45	19.28
848.8	251		22.77	19.60

PCS1900

GSM Measured Power:

Carrier frequency (MHz)	Channel No.	Receiver off		Receiver on	
		RF Power Output (dBm)	Frame average power(dBm)	RF Power Output (dBm)	Frame average power(dBm)
1850.2	512	29.40	20.21	24.28	15.09
1880.0	661	29.32	20.13	24.22	15.03
1909.8	810	29.48	20.29	24.23	15.04

GPRS/EGPRS (GMSK) Measured Power:

Carrier frequency (MHz)	Channel No.	TX Mode	Receiver off		Receiver on	
			RF Power Output (dBm)	Frame average power(dBm)	RF Power Output (dBm)	Frame average power(dBm)
1850.2	512	4Downlink1uplink	29.38	20.19	24.26	15.07
1880.0	661		29.31	20.12	24.22	15.03
1909.8	810		29.47	20.28	24.24	15.05
1850.2	512	3Downlink2uplink	27.45	21.27	22.93	16.75
1880.0	661		27.58	21.40	22.89	16.71
1909.8	810		27.37	21.19	22.59	16.41
1850.2	512	2Downlink3uplink	25.85	24.13	21.28	16.86
1880.0	661		26.25	21.83	21.52	17.10
1909.8	810		25.61	21.19	20.96	16.54
1850.2	512	1Downlink4uplink	24.15	20.98	19.41	16.24
1880.0	661		24.00	20.83	19.65	16.48
1909.8	810		23.85	20.68	19.45	16.28

EGPRS (8PSK) Measured Power:

Carrier frequency (MHz)	Channel No.	TX Mode	Receiver off		Receiver on	
			RF Power Output (dBm)	Frame average power(dBm)	RF Power Output (dBm)	Frame average power(dBm)
1850.2	512	8PSK 4Downlink1uplink	25.53	16.34	20.70	11.51
1880.0	661		25.45	16.26	20.40	11.21
1909.8	810		25.33	16.14	20.80	11.61
1850.2	512	8PSK 3Downlink2uplink	23.21	17.03	19.23	13.05
1880.0	661		23.41	17.23	19.46	13.28
1909.8	810		23.21	17.03	18.59	12.41
1850.2	512	8PSK 2Downlink3uplink	21.15	16.73	16.34	11.92
1880.0	661		20.50	16.08	16.02	11.60
1909.8	810		20.74	16.32	16.09	11.67
1850.2	512	8PSK 1Downlink4uplink	20.40	17.23	15.12	11.95
1880.0	661		20.45	17.28	14.92	11.75
1909.8	810		20.41	17.24	15.03	11.86

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

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

1TX-slot (1uplink) = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.19dB

2TX-slots(2uplink) = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.18dB

3TX-slots (3uplink) = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.42dB

4TX-slots (4uplink) = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.17dB

According to the frame average conducted power, Body-worn SAR measurements are performed with **2TXslots (2uplink)** of GMSK for GPRS850 and **2Txslots (2uplink)** of GMSK for GPRS1900

6.3 WCDMA Measurement result

Release 99

The following procedures are according to FCC KDB Publication 941225 D01.

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
	RMC mode AMR mode	12.2kbps RMC 12.2kbps RMC in 3.4 kbps SRB
	Power Control Algorithm	Algorithm2
	β_c/β_d	8/15

Release 5

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	$\beta_{hs}^{(1)}$	CM(dB) ⁽²⁾
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15 ⁽³⁾	15/15 ⁽³⁾	64	12/15 ⁽³⁾	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: Δ_{ACK} , Δ_{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 β_c/β_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 $\beta_d = 15/15$.

Release 6

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

Sub-test	β_c	β_d	β_d (S F)	β_c/β_d	$\beta_{hs}^{(1)}$	β_{ec}	β_{ed}	β_{ed} (S F)	β_{ed} (code s)	CM ⁽²⁾ (dB)	MP R (dB)	AG ⁽⁴⁾ Index	E-TF CI
1	11/15 ⁽³⁾	15/15 ⁽³⁾	64	11/15 ⁽³⁾	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 ⁽⁴⁾	15/15 ⁽⁴⁾	64	15/15 ⁽⁴⁾	30/15	24/15	134/15	4	1	1.0	2.0	21	81

Note1: Δ_{ACK} , Δ_{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 β_c/β_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 β_c/β_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: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Release 7

The following 1 Sub-test was completed according to Release 7 procedures in section 5.2 of 3GPP TS34.121.

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

Sub-test	β_c (Note 3)	β_d	β_{HS} (Note 1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$.

Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).

Note 3: DPDCH is not configured, therefore the β_c is set to 1 and $\beta_d = 0$ by default.

Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

Release 8

Table E.5.0: Levels for HSDPA connection setup

Parameter During Connection setup	Unit	Value
P-CPICH_Ec/Ior	dB	-10
P-CCPCH and SCH_Ec/Ior	dB	-12
PICH_Ec/Ior	dB	-15
HS-PDSCH	dB	off
HS-SCCH_1	dB	off
DPCH_Ec/Ior	dB	-5
OCNS_Ec/Ior	dB	-3.1

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK

Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.

Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.

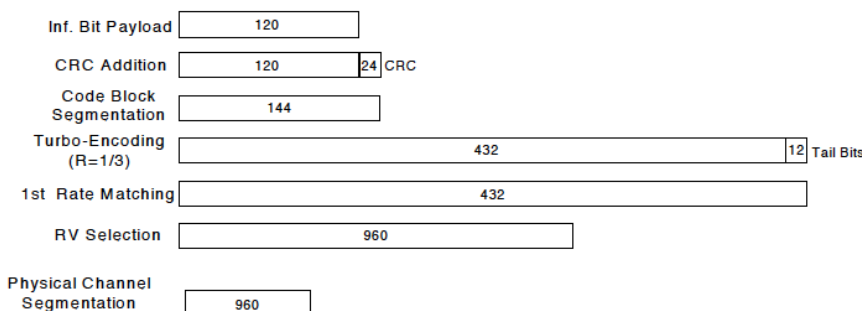


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

The following 4 Sub-tests for HSDPA were completed according to Release 8 procedures in section 5.2 of 3GPP TS34.121.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	$\beta_{hs}^{(1)}$	CM(dB) ⁽²⁾
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15 ⁽³⁾	15/15 ⁽³⁾	64	12/15 ⁽³⁾	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: Δ_{ACK} , Δ_{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 β_c/β_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 $\beta_d = 15/15$.

WCDMA band II

Mode		Carrier frequency (MHz)	Channel No.	RF Power Output (dBm)	
				Receiver off	Receiver on
Release 99	RMC, 12.2kbps	1852.4	9262	23.07	17.01
		1880	9400	23.06	16.96
		1907.6	9538	23.15	17.07
HSDPA	Subtest1	1852.4	9262	21.69	15.68
		1880	9400	21.70	15.58
		1907.6	9538	21.78	15.68
	Subtest2	1852.4	9262	21.66	15.65
		1880	9400	21.71	15.59
		1907.6	9538	21.67	15.57
	Subtest3	1852.4	9262	21.05	14.94
		1880	9400	21.01	14.94
		1907.6	9538	21.10	15.02
	Subtest4	1852.4	9262	21.31	15.20
		1880	9400	21.29	15.22
		1907.6	9538	21.26	15.21
HSUPA	Subtest1	1852.4	9262	21.59	15.52
		1880	9400	21.54	15.51
		1907.6	9538	21.62	15.48
	Subtest2	1852.4	9262	19.64	13.59
		1880	9400	19.64	13.50
		1907.6	9538	19.72	13.63
	Subtest3	1852.4	9262	20.63	14.59
		1880	9400	20.63	14.47
		1907.6	9538	20.71	14.58
	Subtest4	1852.4	9262	19.45	13.37
		1880	9400	19.51	13.45
		1907.6	9538	19.47	13.44
	Subtest5	1852.4	9262	21.73	15.67
		1880	9400	21.68	15.64
		1907.6	9538	21.80	15.67
DC-HSDPA	Subtest1	1852.4	9262	21.97	15.95
		1880	9400	21.94	15.91
		1907.6	9538	21.95	15.92
	Subtest2	1852.4	9262	22.13	16.08
		1880	9400	22.16	16.02
		1907.6	9538	22.18	16.16
	Subtest3	1852.4	9262	22.11	16.01
		1880	9400	22.05	16.08
		1907.6	9538	22.14	16.03
	Subtest4	1852.4	9262	22.03	15.93
		1880	9400	21.99	15.93
		1907.6	9538	22.11	16.02
HSPA+	16QAM	1852.4	9262	21.89	15.84
		1880	9400	21.90	15.80
		1907.6	9538	21.95	15.80

WCDMA band IV

Mode		Carrier frequency (MHz)	Channel No.	RF Power Output (dBm)	
				Receiver off	Receiver on
Release 99	RMC,12.2kbps	1712.4	1312	23.03	16.66
		1732.2	1412	23.08	16.73
		1752.6	1513	22.96	16.58
HSDPA	Subtest1	1712.4	1312	21.65	15.26
		1732.2	1412	21.69	15.34
		1752.6	1513	21.60	15.21
	Subtest2	1712.4	1312	21.61	15.32
		1732.2	1412	21.64	15.21
		1752.6	1513	21.50	15.19
	Subtest3	1712.4	1312	20.93	14.56
		1732.2	1412	21.00	14.64
		1752.6	1513	20.94	14.49
	Subtest4	1712.4	1312	21.20	14.86
		1732.2	1412	21.21	14.87
		1752.6	1513	21.11	14.76
HSUPA	Subtest1	1712.4	1312	21.50	15.21
		1732.2	1412	21.58	15.16
		1752.6	1513	21.46	15.09
	Subtest2	1712.4	1312	19.54	13.21
		1732.2	1412	19.61	13.24
		1752.6	1513	19.51	13.12
	Subtest3	1712.4	1312	20.58	14.24
		1732.2	1412	20.61	14.26
		1752.6	1513	20.54	14.11
	Subtest4	1712.4	1312	19.48	13.10
		1732.2	1412	19.44	13.06
		1752.6	1513	19.34	12.95
	Subtest5	1712.4	1312	21.67	15.31
		1732.2	1412	21.72	15.35
		1752.6	1513	21.63	15.25
DC-HSDPA	Subtest1	1712.4	1312	21.96	15.63
		1732.2	1412	21.99	15.55
		1752.6	1513	21.85	15.45
	Subtest2	1712.4	1312	22.09	15.70
		1732.2	1412	22.10	15.76
		1752.6	1513	22.04	15.60
	Subtest3	1712.4	1312	22.06	15.74
		1732.2	1412	22.07	15.71
		1752.6	1513	22.00	15.61
	Subtest4	1712.4	1312	21.97	15.57
		1732.2	1412	22.03	15.68
		1752.6	1513	21.90	15.53
HSPA+	16QAM	1712.4	1312	21.82	15.48
		1732.2	1412	21.83	15.51
		1752.6	1513	21.76	15.33

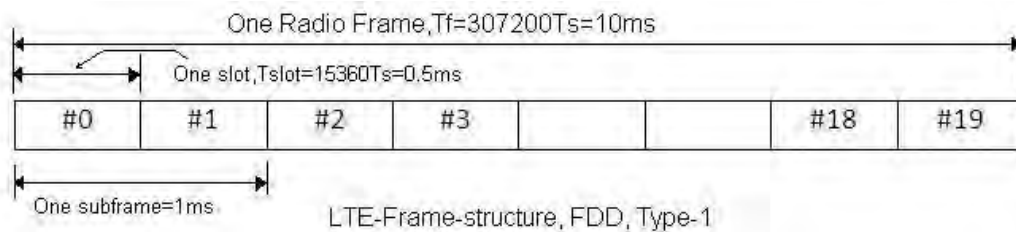
WCDMA band V

Mode		Carrier frequency	Channel No.	RF Power Output
Release 99	RMC, 12.2kbps	826.4	4132	23.04
		836.4	4182	23.05
		846.6	4233	22.99
HSDPA	Subtest1	826.4	4132	21.69
		836.4	4182	21.71
		846.6	4233	21.64
	Subtest2	826.4	4132	21.69
		836.4	4182	21.64
		846.6	4233	21.61
	Subtest3	826.4	4132	21.06
		836.4	4182	21.02
		846.6	4233	21.09
	Subtest4	826.4	4132	21.25
		836.4	4182	21.22
		846.6	4233	21.21
HSUPA	Subtest1	826.4	4132	21.54
		836.4	4182	21.51
		846.6	4233	21.52
	Subtest2	826.4	4132	19.55
		836.4	4182	19.56
		846.6	4233	19.50
	Subtest3	826.4	4132	20.55
		836.4	4182	20.56
		846.6	4233	20.51
	Subtest4	826.4	4132	19.56
		836.4	4182	19.54
		846.6	4233	19.55
	Subtest5	826.4	4132	21.66
		836.4	4182	21.69
		846.6	4233	21.65
DC-HSDPA	Subtest1	826.4	4132	21.94
		836.4	4182	21.96
		846.6	4233	21.94
	Subtest2	826.4	4132	22.09
		836.4	4182	22.13
		846.6	4233	22.05
	Subtest3	826.4	4132	22.05
		836.4	4182	22.06
		846.6	4233	22.04
	Subtest4	826.4	4132	21.94
		836.4	4182	21.95
		846.6	4233	21.94
HSPA+	16QAM	826.4	4132	21.91
		836.4	4182	21.90
		846.6	4233	21.86

Note: UMTS SAR was tested under Rel.99 RMC 12.2kbps mode per KDB Publication 941225 D01. for other higher release configuration, SAR was not required since any average output power was not more than 0.25 dB higher than the RMC level.

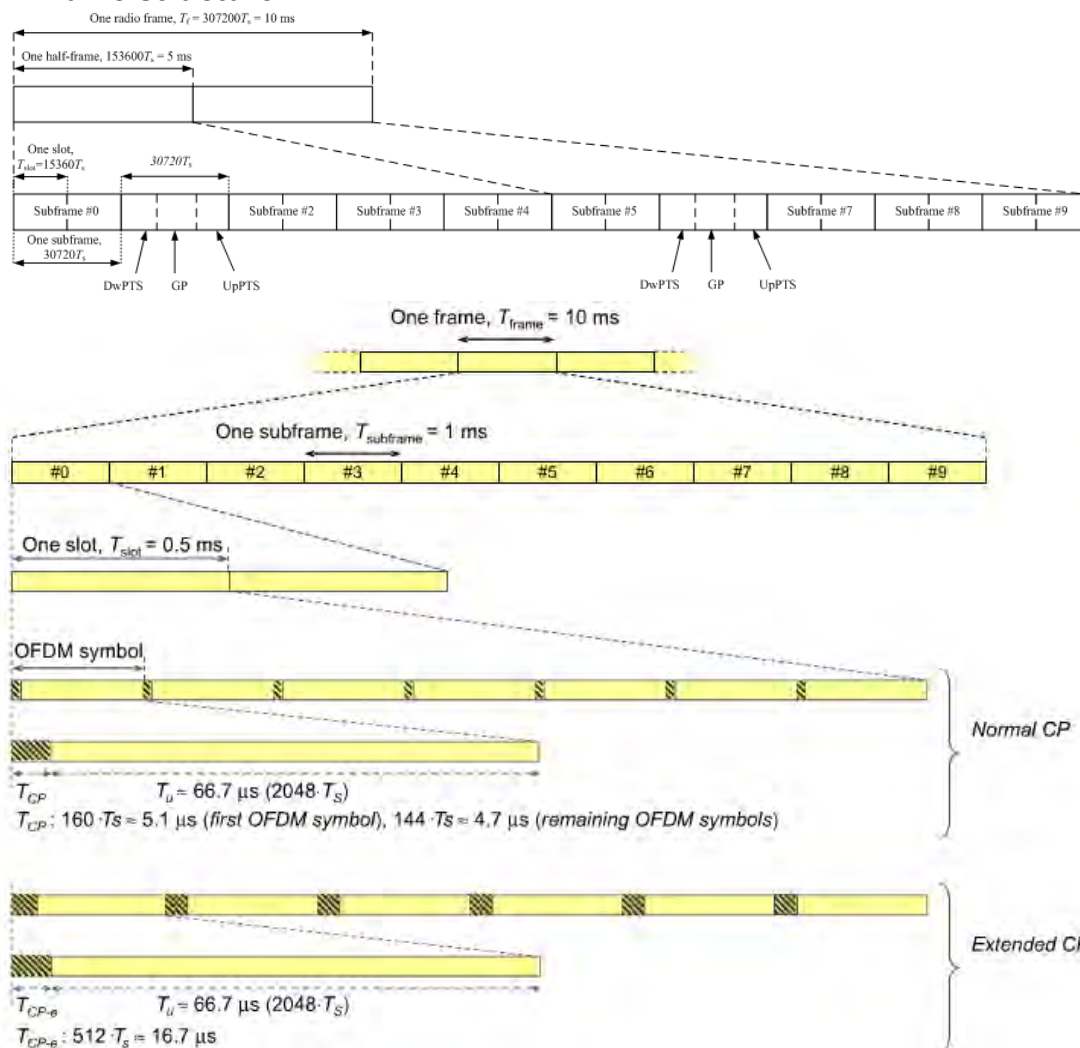
6.4 LTE Measurement result

General description: FDD-LTE frame structure



Type 1 is used as LTE FDD frame structure. As shown in the figure above, an LTE TDD frame is made of total 20 slots, each of 0.5ms. Two consecutive time slots will form one subframe. 10 such subframes form one radio frame. One subframe duration is about 1 ms. and the duty cycle is inherent as 100%

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	$26336 \cdot T_s$			$7680 \cdot T_s$		
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
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%	8.33%
	5~9	14.3%	16.7%
Extended cyclic prefix in downlink	0~3	7.13%	8.33%
	4~7	14.3%	16.7%

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 Up PTS (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)

LTE Band 2

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1850.7	18607	1.4MHz	1	0	22.50
				1	2	22.79
				1	5	22.45
				3	0	22.67
				3	1	22.30
				3	3	22.60
	6	0		21.70		
	1880	18900		1	0	22.45
				1	2	22.58
				1	5	22.61
				3	0	22.63
				3	1	22.29
				3	3	22.58
	6	0		21.66		
	1909.3	19193		1	0	22.21
				1	2	22.49
				1	5	22.34
				3	0	22.39
3			1	22.27		
3			3	22.28		
16QAM	1850.7	18607	6	0	21.35	
			1	0	21.60	
			1	2	21.89	
			1	5	21.83	
			3	0	21.82	
			3	1	21.69	
	3	3	21.52			
	1880	18900	6	0	20.64	
			1	0	21.94	
			1	2	21.99	
			1	5	21.77	
			3	0	21.86	
			3	1	21.48	
	3	3	21.56			
	1909.3	19193	6	0	20.56	
			1	0	21.89	
			1	2	22.19	
			1	5	21.09	
3			0	21.48		
3			1	21.41		
3	3	21.39				
6	0	20.27				

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
64QAM	1850.7	18607	1.4MHz	1	0	20.52
				1	2	20.79
				1	5	20.78
				3	0	20.73
				3	1	20.67
				3	3	20.48
	6	0		19.62		
	1	0		20.87		
	1	2		20.93		
	1	5		20.74		
	3	0		20.83		
	3	1		20.39		
	3	3		20.47		
	6	0		19.49		
	1	0		20.79		
	1	2		21.10		
	1	5		20.02		
	3	0		20.41		
3	1	20.35				
3	3	20.31				
6	0	19.25				
256QAM	1850.7	18607	1	0	17.52	
			1	2	17.81	
			1	5	17.80	
			3	0	17.73	
			3	1	17.61	
			3	3	17.49	
	6	0	17.59			
	1	0	17.87			
	1	2	17.92			
	1	5	17.67			
	3	0	17.79			
	3	1	17.46			
	3	3	17.54			
	6	0	17.54			
	1	0	17.79			
	1	2	18.16			
	1	5	17.01			
	3	0	17.46			
3	1	17.38				
3	3	17.34				
6	0	17.19				

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1851.5	18615	3MHz	1	0	23.05
				1	7	22.79
				1	14	22.76
				8	0	22.04
				8	4	21.92
				8	7	21.85
	15	0		21.95		
	1880	18900		1	0	22.88
				1	7	22.77
				1	14	22.69
				8	0	21.91
				8	4	22.02
				8	7	21.84
	1908.5	19185		15	0	21.88
				1	0	22.68
1			7	22.45		
1			14	22.73		
8			0	21.73		
8			4	21.83		
16QAM	1851.5	18615	8	7	21.45	
			15	0	21.73	
			1	0	22.15	
			1	7	22.11	
			1	14	21.89	
			8	0	20.84	
	1880	18900	8	4	21.10	
			8	7	20.93	
			15	0	20.89	
			1	0	22.19	
			1	7	22.03	
			1	14	21.88	
	1908.5	19185	8	0	20.94	
			8	4	20.98	
			8	7	20.85	
15			0	20.80		
1			0	21.83		
1			7	22.13		
			1	14	21.97	
			8	0	20.65	
			8	4	20.77	
			8	7	20.42	
			15	0	20.66	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
64QAM	1851.5	18615	3MHz	1	0	21.06
				1	7	21.03
				1	14	20.81
				8	0	19.81
				8	4	20.03
				8	7	19.85
	15	0		19.84		
	1880	18900		1	0	21.12
				1	7	20.94
				1	14	20.78
				8	0	19.87
				8	4	19.90
				8	7	19.78
	1908.5	19185		15	0	19.73
				1	0	20.79
				1	7	21.03
				1	14	20.87
				8	0	19.57
8			4	19.72		
256QAM	1851.5	18615	8	7	19.37	
			15	0	19.62	
			1	0	18.12	
			1	7	18.05	
			1	14	17.86	
			8	0	17.74	
	1880	18900	8	4	18.03	
			8	7	17.84	
			15	0	17.87	
			1	0	18.12	
			1	7	17.99	
			1	14	17.84	
	1908.5	19185	8	0	17.87	
			8	4	17.89	
			8	7	17.79	
			15	0	17.71	
			1	0	17.80	
			1	7	18.03	
			1	14	17.93	
			8	0	17.62	
			8	4	17.71	
			8	7	17.37	
			15	0	17.62	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1852.5	18625	5MHz	1	0	22.84
				1	13	22.72
				1	24	22.55
				12	0	21.98
				12	6	21.97
				12	13	21.75
	25	0		22.02		
	1	0		22.84		
	1	13		22.68		
	1	24		22.53		
	12	0		21.78		
	12	6		21.80		
	12	13		21.81		
	25	0		21.80		
	1	0		22.58		
	1	13		22.43		
	1	24		22.53		
	12	0		21.72		
12	6	21.58				
12	13	21.60				
25	0	21.67				
16QAM	1852.5	18625	1	0	21.88	
			1	13	21.97	
			1	24	21.78	
			12	0	21.10	
			12	6	21.05	
			12	13	20.98	
	25	0	20.92			
	1	0	22.46			
	1	13	21.96			
	1	24	22.36			
	12	0	20.96			
	12	6	20.83			
	12	13	20.95			
	25	0	20.87			
	1	0	22.07			
	1	13	22.35			
	1	24	21.60			
	12	0	20.75			
12	6	20.74				
12	13	20.54				
25	0	20.64				

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
64QAM	1852.5	18625	5MHz	1	0	20.80
				1	13	20.89
				1	24	20.72
				12	0	20.03
				12	6	20.00
				12	13	19.94
				25	0	19.84
	1880	18900		1	0	21.42
				1	13	20.86
				1	24	21.29
				12	0	19.94
				12	6	19.78
				12	13	19.92
				25	0	19.78
	1907.5	19175		1	0	21.04
				1	13	21.33
				1	24	20.58
				12	0	19.71
				12	6	19.71
				12	13	19.49
				25	0	19.58
256QAM	1852.5	18625	1	0	17.83	
			1	13	17.90	
			1	24	17.71	
			12	0	18.03	
			12	6	17.97	
			12	13	17.91	
			25	0	17.88	
	1880	18900	1	0	18.43	
			1	13	17.93	
			1	24	18.29	
			12	0	17.92	
			12	6	17.73	
			12	13	17.86	
			25	0	17.85	
	1907.5	19175	1	0	18.02	
			1	13	18.32	
			1	24	17.54	
			12	0	17.71	
			12	6	17.67	
			12	13	17.48	
			25	0	17.59	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1855	18650	10MHz	1	0	22.81
				1	25	22.58
				1	49	22.47
				25	0	21.92
				25	13	21.79
				25	25	21.80
	50	0		21.89		
	1	0		22.99		
	1	25		22.57		
	1	49		22.44		
	25	0		21.86		
	25	13		21.72		
	25	25		21.75		
	50	0		21.76		
	1	0		22.70		
	1	25		22.41		
	1	49		22.55		
	25	0		21.70		
25	13	21.56				
25	25	21.56				
50	0	21.54				
16QAM	1855	18650	1	0	22.10	
			1	25	22.47	
			1	49	22.39	
			25	0	20.92	
			25	13	20.88	
			25	25	20.75	
	50	0	20.97			
	1	0	22.41			
	1	25	22.03			
	1	49	22.00			
	25	0	20.87			
	25	13	20.81			
	25	25	20.82			
	50	0	20.82			
	1	0	21.64			
	1	25	21.98			
	1	49	21.84			
	25	0	20.64			
25	13	20.63				
25	25	20.54				
50	0	20.64				

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
64QAM	1855	18650	10MHz	1	0	21.03
				1	25	21.42
				1	49	21.29
				25	0	19.85
				25	13	19.80
				25	25	19.69
	50	0		19.95		
	1	0		21.34		
	1	25		20.93		
	1	49		20.93		
	25	0		19.81		
	25	13		19.76		
	25	25		19.75		
	50	0		19.80		
	1	0		20.57		
	1	25		20.88		
	1	49		20.81		
	25	0		19.55		
25	13	19.59				
25	25	19.46				
50	0	19.57				
256QAM	1855	18650	1	0	18.03	
			1	25	18.45	
			1	49	18.30	
			25	0	17.83	
			25	13	17.82	
			25	25	17.67	
	50	0	17.89			
	1	0	18.31			
	1	25	17.99			
	1	49	17.92			
	25	0	17.84			
	25	13	17.71			
	25	25	17.75			
	50	0	17.80			
	1	0	17.54			
	1	25	17.93			
	1	49	17.81			
	25	0	17.61			
25	13	17.58				
25	25	17.44				
50	0	17.60				

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1857.5	18675	15MHz	1	0	22.76
				1	38	22.66
				1	74	22.43
				36	0	21.85
				36	18	21.84
				36	39	21.78
				75	0	21.76
	1880	18900		1	0	22.65
				1	38	22.58
				1	74	22.54
				36	0	21.70
				36	18	21.69
				36	39	21.82
				75	0	21.71
	1902.5	19125		1	0	22.48
				1	38	22.39
				1	74	22.33
				36	0	21.51
				36	18	21.59
				36	39	21.54
				75	0	21.60
16QAM	1857.5	18675	1	0	22.32	
			1	38	21.88	
			1	74	21.62	
			36	0	20.83	
			36	18	20.80	
			36	39	20.78	
			75	0	20.75	
	1880	18900	1	0	22.12	
			1	38	21.69	
			1	74	21.87	
			36	0	20.79	
			36	18	20.77	
			36	39	20.70	
			75	0	20.69	
	1902.5	19125	1	0	21.42	
			1	38	21.50	
			1	74	21.45	
			36	0	20.55	
			36	18	20.45	
			36	39	20.57	
			75	0	20.42	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
64QAM	1857.5	18675	15MHz	1	0	21.28
				1	38	20.84
				1	74	20.57
				36	0	19.74
				36	18	19.72
				36	39	19.71
				75	0	19.67
	1880	18900		1	0	21.02
				1	38	20.63
				1	74	20.78
				36	0	19.73
				36	18	19.74
				36	39	19.68
				75	0	19.60
	1902.5	19125		1	0	20.37
				1	38	20.45
				1	74	20.35
				36	0	19.52
				36	18	19.42
				36	39	19.48
				75	0	19.34
256QAM	1857.5	18675	1	0	18.29	
			1	38	17.78	
			1	74	17.56	
			36	0	17.75	
			36	18	17.76	
			36	39	17.74	
			75	0	17.69	
	1880	18900	1	0	18.08	
			1	38	17.60	
			1	74	17.79	
			36	0	17.77	
			36	18	17.69	
			36	39	17.60	
			75	0	17.59	
	1902.5	19125	1	0	17.32	
			1	38	17.42	
			1	74	17.37	
			36	0	17.53	
			36	18	17.41	
			36	39	17.48	
			75	0	17.33	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1860	18700	20MHz	1	0	22.71
				1	50	22.72
				1	99	22.56
				50	0	21.75
				50	25	21.83
				50	50	21.81
	100	0		21.85		
	1880	18900		1	0	22.66
				1	50	22.73
				1	99	22.66
				50	0	21.84
				50	25	21.61
				50	50	21.68
	1900	19100		100	0	21.65
				1	0	22.71
1			50	22.71		
1			99	22.34		
50			0	21.65		
50			25	21.52		
16QAM	1860	18700	50	50	21.60	
			100	0	21.56	
			1	0	22.18	
			1	50	21.79	
			1	99	21.80	
			50	0	20.70	
	1880	18900	50	25	20.86	
			50	50	20.67	
			100	0	20.77	
			1	0	22.23	
			1	50	21.58	
			1	99	21.90	
	1900	19100	50	0	20.82	
			50	25	20.67	
			50	50	20.75	
100			0	20.74		
1			0	21.68		
1			50	22.01		
			1	99	21.68	
			50	0	20.78	
			50	25	20.62	
			50	50	20.46	
			100	0	20.52	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
64QAM	1860	18700	20MHz	1	0	21.14
				1	50	20.77
				1	99	20.71
				50	0	19.63
				50	25	19.81
				50	50	19.60
	100	0		19.69		
	1	0		21.21		
	1	50		20.51		
	1	99		20.85		
	50	0		19.80		
	50	25		19.59		
	50	50		19.68		
	100	0		19.72		
	1	0		20.60		
	1	50		20.99		
	1	99		20.64		
	50	0		19.74		
50	25	19.52				
50	50	19.40				
100	0	19.42				
256QAM	1860	18700	1	0	18.16	
			1	50	17.76	
			1	99	17.72	
			50	0	17.61	
			50	25	17.77	
			50	50	17.59	
	100	0	17.75			
	1	0	18.20			
	1	50	17.51			
	1	99	17.86			
	50	0	17.74			
	50	25	17.58			
	50	50	17.66			
	100	0	17.71			
	1	0	17.62			
	1	50	17.94			
	1	99	17.59			
	50	0	17.75			
50	25	17.56				
50	50	17.44				
100	0	17.47				

LTE Band 2(EN_DC)

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1850.7	18607	1.4MHz	1	0	20.75
				1	2	21.00
				1	5	20.65
				3	0	20.87
				3	1	20.54
				3	3	20.84
	1880	18900		6	0	19.91
				1	0	20.67
				1	2	20.81
				1	5	20.81
				3	0	20.86
				3	1	20.50
	1909.3	19193		3	3	20.78
				6	0	19.87
				1	0	20.42
				1	2	20.70
				1	5	20.55
				3	0	20.60
16QAM	1850.7	18607	3	1	20.51	
			3	3	20.52	
			6	0	19.58	
			1	0	19.80	
			1	2	20.09	
			1	5	20.06	
	1880	18900	3	0	20.02	
			3	1	19.94	
			3	3	19.75	
			6	0	18.85	
			1	0	20.16	
			1	2	20.21	
	1909.3	19193	1	5	19.99	
			3	0	20.09	
			3	1	19.68	
			3	3	19.80	
			6	0	18.76	
			1	0	20.09	
			1	2	20.40	
			1	5	19.30	
			3	0	19.73	
			3	1	19.61	
			3	3	19.59	
			6	0	18.48	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
64QAM	1850.7	18607	1.4MHz	1	0	18.73
				1	2	18.92
				1	5	18.63
				3	0	18.84
				3	1	18.51
				3	3	18.75
	6	0		17.86		
	1880	18900		1	0	18.59
				1	2	18.72
				1	5	18.72
				3	0	18.77
				3	1	18.46
				3	3	18.76
	6	0		17.85		
	1909.3	19193		1	0	18.39
				1	2	18.66
				1	5	18.46
				3	0	18.51
3			1	18.49		
3			3	18.47		
256QAM	1850.7	18607	6	0	17.51	
			1	0	15.76	
			1	2	16.00	
			1	5	16.01	
			3	0	15.99	
			3	1	15.92	
	3	3	15.73			
	1880	18900	6	0	15.83	
			1	0	16.11	
			1	2	16.12	
			1	5	15.89	
			3	0	16.07	
			3	1	15.64	
	1909.3	19193	3	3	15.76	
			6	0	15.69	
			1	0	16.06	
			1	2	16.34	
			1	5	15.22	
3			0	15.71		
3	1	15.59				
3	3	15.49				
6	0	15.45				

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1851.5	18615	3MHz	1	0	21.27
				1	7	21.03
				1	14	20.99
				8	0	20.27
				8	4	20.15
				8	7	20.06
	15	0		20.18		
	1880	18900		1	0	21.13
				1	7	20.97
				1	14	20.94
				8	0	20.16
				8	4	20.25
				8	7	20.07
	1908.5	19185		15	0	20.12
				1	0	20.88
1			7	20.65		
1			14	20.95		
8			0	19.93		
8			4	20.07		
16QAM	1851.5	18615	8	7	19.69	
			15	0	19.98	
			1	0	20.40	
			1	7	20.34	
			1	14	20.13	
			8	0	19.04	
	1880	18900	8	4	19.32	
			8	7	19.16	
			15	0	19.13	
			1	0	20.43	
			1	7	20.28	
			1	14	20.12	
	1908.5	19185	8	0	19.15	
			8	4	19.21	
			8	7	19.09	
15			0	19.03		
1			0	20.03		
1			7	20.33		
			1	14	20.20	
			8	0	18.89	
			8	4	19.00	
			8	7	18.63	
			15	0	18.88	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
64QAM	1851.5	18615	3MHz	1	0	19.21
				1	7	19.01
				1	14	18.93
				8	0	18.22
				8	4	18.13
				8	7	17.98
	15	0		18.16		
	1880	18900		1	0	19.07
				1	7	18.95
				1	14	18.91
				8	0	18.13
				8	4	18.15
				8	7	18.05
	1908.5	19185		15	0	18.02
				1	0	18.83
				1	7	18.63
				1	14	18.90
				8	0	17.91
8			4	18.01		
256QAM	1851.5	18615	8	7	17.61	
			15	0	17.89	
			1	0	16.35	
			1	7	16.27	
			1	14	16.06	
			8	0	15.99	
	1880	18900	8	4	16.26	
			8	7	16.08	
			15	0	16.05	
			1	0	16.34	
			1	7	16.21	
			1	14	16.08	
	1908.5	19185	8	0	16.11	
			8	4	16.18	
			8	7	16.07	
			15	0	15.97	
			1	0	15.98	
			1	7	16.23	
		1	14	16.18		
		8	0	15.83		
		8	4	15.98		
		8	7	15.61		
		15	0	15.81		

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1852.5	18625	5MHz	1	0	21.04
				1	13	20.97
				1	24	20.78
				12	0	20.21
				12	6	20.21
				12	13	19.96
	25	0		20.23		
	1880	18900		1	0	21.08
				1	13	20.92
				1	24	20.77
				12	0	20.01
				12	6	20.03
				12	13	20.06
	25	0		20.05		
	1907.5	19175		1	0	20.81
				1	13	20.64
				1	24	20.76
				12	0	19.94
12			6	19.79		
12			13	19.81		
16QAM	1852.5	18625	25	0	19.92	
			1	0	20.11	
			1	13	20.17	
			1	24	20.01	
			12	0	19.31	
			12	6	19.28	
	12	13	19.23			
	25	0	19.14			
	1880	18900	1	0	20.71	
			1	13	20.18	
			1	24	20.60	
			12	0	19.19	
			12	6	19.03	
			12	13	19.20	
	25	0	19.11			
	1907.5	19175	1	0	20.28	
			1	13	20.59	
			1	24	19.85	
12			0	18.98		
12			6	18.99		
12			13	18.74		
25	0	18.86				

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
64QAM	1852.5	18625	5MHz	1	0	18.97
				1	13	18.91
				1	24	18.71
				12	0	18.18
				12	6	18.17
				12	13	17.94
	25	0		18.14		
	1880	18900		1	0	19.05
				1	13	18.84
				1	24	18.74
				12	0	17.99
				12	6	17.94
				12	13	17.97
	25	0		18.01		
	1907.5	19175		1	0	18.71
				1	13	18.55
				1	24	18.74
				12	0	17.89
12			6	17.77		
12			13	17.78		
256QAM	1852.5	18625	25	0	17.90	
			1	0	16.03	
			1	13	16.15	
			1	24	15.92	
			12	0	16.21	
			12	6	16.24	
	12	13	16.21			
	1880	18900	25	0	16.06	
			1	0	16.63	
			1	13	16.16	
			1	24	16.58	
			12	0	16.16	
			12	6	16.00	
	12	13	16.15			
	1907.5	19175	25	0	16.03	
			1	0	16.26	
			1	13	16.57	
			1	24	15.83	
12			0	15.95		
12			6	15.90		
12	13	15.67				
25	0	15.80				

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1855	18650	10MHz	1	0	21.05
				1	25	20.83
				1	49	20.69
				25	0	20.15
				25	13	20.04
				25	25	20.02
	50	0		20.13		
	1880	18900		1	0	21.22
				1	25	20.81
				1	49	20.69
				25	0	20.07
				25	13	19.96
				25	25	20.00
	1905	19150		50	0	20.00
				1	0	20.95
				1	25	20.66
				1	49	20.80
				25	0	19.90
25			13	19.76		
16QAM	1855	18650	25	25	19.77	
			50	0	19.78	
			1	0	20.30	
			1	25	20.70	
			1	49	20.59	
			25	0	19.12	
	1880	18900	25	13	19.08	
			25	25	18.99	
			50	0	19.18	
			1	0	20.65	
			1	25	20.24	
			1	49	20.21	
	1905	19150	25	0	19.08	
			25	13	19.01	
			25	25	19.04	
			50	0	19.03	
			1	0	19.88	
			1	25	20.21	
			1	49	20.09	
			25	0	18.84	
			25	13	18.87	
			25	25	18.78	
			50	0	18.88	
			50	0	18.88	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
64QAM	1855	18650	10MHz	1	0	18.98
				1	25	18.73
				1	49	18.61
				25	0	18.11
				25	13	17.95
				25	25	17.96
	50	0		18.10		
	1880	18900		1	0	19.19
				1	25	18.79
				1	49	18.59
				25	0	18.02
				25	13	17.91
				25	25	17.97
	1905	19150		50	0	17.97
				1	0	18.91
				1	25	18.58
				1	49	18.70
				25	0	17.80
25			13	17.70		
256QAM	1855	18650	25	25	17.74	
			50	0	17.70	
			1	0	16.26	
			1	25	16.68	
			1	49	16.52	
			25	0	16.06	
	1880	18900	25	13	16.05	
			25	25	15.92	
			50	0	16.12	
			1	0	16.57	
			1	25	16.14	
			1	49	16.19	
	1905	19150	25	0	16.03	
			25	13	15.94	
			25	25	15.94	
			50	0	15.93	
			1	0	15.84	
			1	25	16.17	
			1	49	16.00	
			25	0	15.77	
			25	13	15.78	
			25	25	15.76	
			50	0	15.84	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1857.5	18675	15MHz	1	0	21.01
				1	38	20.90
				1	74	20.65
				36	0	20.06
				36	18	20.09
				36	39	20.00
	75	0		19.99		
	1	0		20.90		
	1	38		20.81		
	1	74		20.76		
	36	0		19.93		
	36	18		19.92		
	36	39		20.06		
	75	0		19.94		
	1	0		20.73		
	1	38		20.60		
	1	74		20.56		
	16QAM	1857.5		18675	15MHz	36
36			18			19.82
36			39			19.77
75			0			19.80
1			0			20.57
1			38			20.09
1		74	19.87			
36		0	19.05			
36		18	19.03			
36		39	18.98			
75		0	18.96			
1		0	20.32			
1		38	19.91			
1		74	20.08			
36		0	19.01			
36		18	18.97			
36		39	18.95			
75		0	18.90			
1902.5	19125	15MHz	1	0	19.64	
			1	38	19.74	
			1	74	19.70	
			36	0	18.80	
			36	18	18.67	
			36	39	18.78	
75	0	18.65				

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
64QAM	1857.5	18675	15MHz	1	0	18.94
				1	38	18.86
				1	74	18.55
				36	0	18.01
				36	18	18.06
				36	39	17.94
	75	0		17.92		
	1880	18900		1	0	18.85
				1	38	18.73
				1	74	18.70
				36	0	17.83
				36	18	17.86
				36	39	17.96
	1902.5	19125		75	0	17.85
				1	0	18.68
				1	38	18.58
				1	74	18.47
				36	0	17.68
36			18	17.74		
256QAM	1857.5	18675	36	39	17.67	
			75	0	17.71	
			1	0	16.55	
			1	38	16.04	
			1	74	15.84	
			36	0	15.99	
	1880	18900	36	18	16.00	
			36	39	15.91	
			75	0	15.89	
			1	0	16.28	
			1	38	15.87	
			1	74	15.98	
	1902.5	19125	36	0	15.94	
			36	18	15.87	
			36	39	15.93	
			75	0	15.80	
			1	0	15.61	
			1	38	15.71	
		1	74	15.62		
		36	0	15.74		
		36	18	15.59		
		36	39	15.74		
		75	0	15.61		

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1860	18700	20MHz	1	0	20.96
				1	50	20.95
				1	99	20.76
				50	0	20.00
				50	25	20.07
				50	50	20.04
	100	0		20.10		
	1880	18900		1	0	20.88
				1	50	20.94
				1	99	20.89
				50	0	20.09
				50	25	19.84
				50	50	19.93
	1900	19100		100	0	19.88
				1	0	20.95
				1	50	20.92
				1	99	20.56
				50	0	19.87
50			25	19.75		
16QAM	1860	18700	50	50	19.82	
			100	0	19.81	
			1	0	20.42	
			1	50	20.02	
			1	99	20.01	
			50	0	18.92	
	1880	18900	50	25	19.11	
			50	50	18.91	
			100	0	19.00	
			1	0	20.46	
			1	50	19.80	
			1	99	20.10	
	1900	19100	50	0	19.07	
			50	25	18.92	
			50	50	19.00	
			100	0	18.99	
			1	0	19.92	
			1	50	20.21	
			1	99	19.93	
			50	0	18.98	
			50	25	18.83	
			50	50	18.71	
			100	0	18.72	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
64QAM	1860	18700	20MHz	1	0	18.89
				1	50	18.87
				1	99	18.74
				50	0	17.93
				50	25	18.03
				50	50	17.97
	100	0		18.04		
	1880	18900		1	0	18.86
				1	50	18.87
				1	99	18.79
				50	0	18.05
				50	25	17.80
				50	50	17.83
	1900	19100		100	0	17.84
				1	0	18.86
				1	50	18.84
				1	99	18.51
				50	0	17.78
50			25	17.71		
256QAM	1860	18700	50	50	17.73	
			100	0	17.72	
			1	0	16.37	
			1	50	15.99	
			1	99	15.96	
			50	0	15.90	
	1880	18900	50	25	16.05	
			50	50	15.84	
			100	0	15.96	
			1	0	16.36	
			1	50	15.75	
			1	99	16.05	
	1900	19100	50	0	15.97	
			50	25	15.90	
			50	50	15.98	
			100	0	15.93	
			1	0	15.83	
			1	50	16.15	
			1	99	15.88	
			50	0	15.95	
			50	25	15.81	
			50	50	15.69	
			100	0	15.70	

LTE Band 4

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1710.7	19957	1.4MHz	1	0	22.13
				1	2	22.15
				1	5	22.23
				3	0	22.21
				3	1	22.25
				3	3	22.30
	6	0		21.33		
	1	0		22.18		
	1	2		22.37		
	1	5		22.16		
	3	0		22.29		
	3	1		22.25		
	3	3		22.27		
	6	0		21.37		
	1	0		22.30		
	1	2		22.35		
	1	5		22.33		
	16QAM	1710.7		19957	1.4MHz	3
3			1			22.37
3			3			22.31
6			0			21.44
1			0			21.49
1			2			21.59
1		5	21.75			
3		0	21.36			
3		1	21.44			
3		3	21.29			
6		0	20.49			
1		0	21.68			
1		2	21.59			
1		5	21.85			
3		0	21.40			
3		1	21.35			
3		3	21.43			
6		0	20.58			
1754.3	20393	20393	1.4MHz	1	0	21.57
				1	2	21.86
				1	5	21.55
				3	0	21.47
				3	1	21.55
				3	3	21.40
6	0	20.78				

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
64QAM	1710.7	19957	1.4MHz	1	0	20.10
				1	2	20.13
				1	5	20.17
				3	0	20.15
				3	1	20.20
				3	3	20.22
	6	0		19.27		
	1732.5	20175		1	0	20.16
				1	2	20.31
				1	5	20.06
				3	0	20.20
				3	1	20.20
				3	3	20.23
	1754.3	20393		6	0	19.34
				1	0	20.23
				1	2	20.31
				1	5	20.27
				3	0	20.29
3			1	20.28		
256QAM	1710.7	19957	3	3	20.23	
			6	0	19.38	
			1	0	17.43	
			1	2	17.52	
			1	5	17.70	
			3	0	17.26	
	1732.5	20175	3	1	17.35	
			3	3	17.27	
			6	0	17.42	
			1	0	17.66	
			1	2	17.57	
			1	5	17.76	
	1754.3	20393	3	0	17.32	
			3	1	17.30	
			3	3	17.36	
			6	0	17.50	
			1	0	17.51	
			1	2	17.80	
			1	5	17.53	
			3	0	17.45	
			3	1	17.48	
			3	3	17.37	
			6	0	17.71	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1711.5	19965	3MHz	1	0	22.50
				1	7	22.57
				1	14	22.38
				8	0	21.55
				8	4	21.54
				8	7	21.56
	15	0		21.60		
	1732.5	20175		1	0	22.53
				1	7	22.55
				1	14	22.44
				8	0	21.53
				8	4	21.67
				8	7	21.55
	1753.5	20385		15	0	21.54
				1	0	22.62
1			7	22.46		
1			14	22.67		
8			0	21.59		
8			4	21.67		
16QAM	1711.5	19965	8	7	21.67	
			15	0	21.73	
			1	0	21.33	
			1	7	21.78	
			1	14	21.95	
			8	0	20.40	
	1732.5	20175	8	4	20.73	
			8	7	20.70	
			15	0	20.59	
			1	0	22.06	
			1	7	21.51	
			1	14	21.59	
	1753.5	20385	8	0	20.56	
			8	4	20.89	
			8	7	20.86	
15			0	20.66		
1			0	22.23		
1			7	21.77		
			1	14	21.76	
			8	0	20.76	
			8	4	20.60	
			8	7	20.49	
			15	0	20.87	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
64QAM	1711.5	19965	3MHz	1	0	20.42
				1	7	20.49
				1	14	20.35
				8	0	19.53
				8	4	19.44
				8	7	19.52
	15	0		19.56		
	1732.5	20175		1	0	20.51
				1	7	20.53
				1	14	20.37
				8	0	19.51
				8	4	19.63
				8	7	19.49
	1753.5	20385		15	0	19.45
				1	0	20.54
1			7	20.36		
1			14	20.59		
8			0	19.53		
8			4	19.65		
256QAM	1711.5	19965	8	7	19.64	
			15	0	19.66	
			1	0	17.26	
			1	7	17.74	
			1	14	17.87	
			8	0	17.30	
	1732.5	20175	8	4	17.69	
			8	7	17.61	
			15	0	17.51	
			1	0	18.02	
			1	7	17.45	
			1	14	17.55	
	1753.5	20385	8	0	17.51	
			8	4	17.83	
			8	7	17.78	
15			0	17.61		
1			0	18.13		
1			7	17.72		
			1	14	17.71	
			8	0	17.69	
			8	4	17.57	
			8	7	17.47	
			15	0	17.77	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1712.5	19975	5MHz	1	0	22.57
				1	13	22.52
				1	24	22.45
				12	0	21.62
				12	6	21.59
				12	13	21.57
	25	0		21.59		
	1732.5	20175		1	0	22.53
				1	13	22.52
				1	24	22.46
				12	0	21.62
				12	6	21.50
				12	13	21.60
	1752.5	20375		25	0	21.62
				1	0	22.64
				1	13	22.47
				1	24	22.54
				12	0	21.64
12			6	21.64		
16QAM	1712.5	19975	12	13	21.66	
			25	0	21.69	
			1	0	21.61	
			1	13	21.53	
			1	24	21.67	
			12	0	20.69	
	1732.5	20175	12	6	20.62	
			12	13	20.65	
			25	0	20.63	
			1	0	21.89	
			1	13	22.08	
			1	24	21.62	
	1752.5	20375	12	0	20.55	
			12	6	20.55	
			12	13	20.63	
			25	0	20.63	
			1	0	21.86	
			1	13	22.31	
			1	24	22.08	
			12	0	20.69	
			12	6	20.71	
			12	13	20.61	
			25	0	20.65	
			25	0	20.65	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
64QAM	1712.5	19975	5MHz	1	0	20.49
				1	13	20.48
				1	24	20.41
				12	0	19.57
				12	6	19.56
				12	13	19.53
	25	0		19.52		
	1732.5	20175		1	0	20.45
				1	13	20.43
				1	24	20.40
				12	0	19.52
				12	6	19.46
				12	13	19.58
	25	0		19.57		
	1752.5	20375		1	0	20.55
				1	13	20.38
				1	24	20.45
				12	0	19.55
12			6	19.60		
12			13	19.58		
256QAM	1712.5	19975	25	0	19.60	
			1	0	17.53	
			1	13	17.45	
			1	24	17.58	
			12	0	17.67	
			12	6	17.56	
	12	13	17.62			
	1732.5	20175	25	0	17.55	
			1	0	17.85	
			1	13	18.02	
			1	24	17.56	
			12	0	17.50	
			12	6	17.47	
	12	13	17.57			
	1752.5	20375	25	0	17.57	
			1	0	17.81	
			1	13	18.28	
			1	24	18.00	
12			0	17.59		
12			6	17.67		
12	13	17.55				
			25	0	17.58	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1715	20000	10MHz	1	0	22.56
				1	25	22.32
				1	49	22.15
				25	0	21.57
				25	13	21.54
				25	25	21.53
	50	0		21.50		
	1732.5	20175		1	0	22.43
				1	25	22.64
				1	49	22.56
				25	0	21.47
				25	13	21.41
				25	25	21.55
	1750	20350		50	0	21.44
				1	0	22.49
				1	25	22.39
				1	49	22.39
				25	0	21.68
25			13	21.65		
16QAM	1715	20000	25	25	21.62	
			50	0	21.70	
			1	0	21.77	
			1	25	21.89	
			1	49	21.40	
			25	0	20.58	
	1732.5	20175	25	13	20.65	
			25	25	20.53	
			50	0	20.53	
			1	0	22.19	
			1	25	21.73	
			1	49	21.78	
	1750	20350	25	0	20.61	
			25	13	20.54	
			25	25	20.69	
			50	0	20.61	
			1	0	21.95	
			1	25	21.67	
			1	49	22.21	
			25	0	20.61	
			25	13	20.71	
			25	25	20.56	
			50	0	20.59	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
64QAM	1715	20000	10MHz	1	0	20.51
				1	25	20.29
				1	49	20.10
				25	0	19.50
				25	13	19.44
				25	25	19.49
	50	0		19.47		
	1732.5	20175		1	0	20.33
				1	25	20.60
				1	49	20.50
				25	0	19.44
				25	13	19.38
				25	25	19.48
	1750	20350		50	0	19.35
				1	0	20.46
				1	25	20.37
				1	49	20.31
				25	0	19.63
25			13	19.56		
256QAM	1715	20000	25	25	19.59	
			50	0	19.65	
			1	0	17.68	
			1	25	17.85	
			1	49	17.32	
			25	0	17.48	
	1732.5	20175	25	13	17.58	
			25	25	17.46	
			50	0	17.45	
			1	0	18.10	
			1	25	17.65	
			1	49	17.76	
	1750	20350	25	0	17.54	
			25	13	17.48	
			25	25	17.59	
			50	0	17.51	
			1	0	17.88	
			1	25	17.58	
			1	49	18.18	
			25	0	17.52	
			25	13	17.68	
			25	25	17.48	
			50	0	17.55	
			50	0	17.55	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1717.5	20025	15MHz	1	0	22.39
				1	38	22.24
				1	74	22.24
				36	0	21.43
				36	18	21.39
				36	39	21.39
				75	0	21.37
	1732.5	20175		1	0	22.36
				1	38	22.34
				1	74	22.26
				36	0	21.38
				36	18	21.42
				36	39	21.42
				75	0	21.39
	1747.5	20325		1	0	22.41
1			38	22.40		
1			74	22.34		
36			0	21.42		
36			18	21.55		
36			39	21.48		
75			0	21.35		
16QAM	1717.5	20025	1	0	21.67	
			1	38	21.36	
			1	74	21.79	
			36	0	20.32	
			36	18	20.39	
			36	39	20.40	
			75	0	20.41	
	1732.5	20175	1	0	21.70	
			1	38	21.89	
			1	74	21.60	
			36	0	20.35	
			36	18	20.38	
			36	39	20.50	
			75	0	20.50	
	1747.5	20325	1	0	21.71	
1			38	21.67		
1			74	21.46		
36			0	20.53		
36			18	20.52		
36			39	20.46		
75			0	20.36		

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
64QAM	1717.5	20025	15MHz	1	0	20.29
				1	38	20.21
				1	74	20.19
				36	0	19.33
				36	18	19.34
				36	39	19.29
	75	0		19.35		
	1732.5	20175		1	0	20.31
				1	38	20.24
				1	74	20.23
				36	0	19.29
				36	18	19.36
				36	39	19.39
	1747.5	20325		75	0	19.35
				1	0	20.35
				1	38	20.37
				1	74	20.26
				36	0	19.35
36			18	19.53		
256QAM	1717.5	20025	36	39	19.42	
			75	0	19.33	
			1	0	17.65	
			1	38	17.29	
			1	74	17.73	
			36	0	17.24	
	1732.5	20175	36	18	17.37	
			36	39	17.34	
			75	0	17.32	
			1	0	17.66	
			1	38	17.83	
			1	74	17.57	
	1747.5	20325	36	0	17.31	
			36	18	17.30	
			36	39	17.47	
			75	0	17.42	
			1	0	17.62	
			1	38	17.60	
			1	74	17.38	
			36	0	17.50	
			36	18	17.48	
			36	39	17.41	
			75	0	17.26	

Modulation	Carrier frequency(MHz)	UL Channel	Bandwidth	RB size	RB offset	Conducted Power(dBm)
QPSK	1720	20050	20MHz	1	0	22.27
				1	50	22.40
				1	99	22.29
				50	0	21.36
				50	25	21.33
				50	50	21.36
	100	0		21.47		
	1732.5	20175		1	0	22.27
				1	50	22.41
				1	99	22.40
				50	0	21.53
				50	25	21.47
				50	50	21.42
	1745	20300		100	0	21.37
				1	0	22.28
				1	50	22.40
				1	99	22.25
				50	0	21.52
50			25	21.34		
16QAM	1720	20050	50	50	21.49	
			100	0	21.54	
			1	0	21.39	
			1	50	21.49	
			1	99	21.53	
			50	0	20.44	
	1732.5	20175	50	25	20.41	
			50	50	20.44	
			100	0	20.39	
			1	0	21.65	
			1	50	21.32	
			1	99	21.90	
	1745	20300	50	0	20.53	
			50	25	20.45	
			50	50	20.46	
			100	0	20.36	
			1	0	21.66	
			1	50	21.86	
			1	99	21.64	
			50	0	20.55	
			50	25	20.45	
			50	50	20.52	
			100	0	20.44	
			100	0	20.44	