FCC SAR Compliance Test Report

Product Name:	Smart Phone
Model:	SLA-L03
Report No.:	SYBH(Z-SAR)002102017-2
FCC ID:	QISSLA-L03

	APPROVED (Lab Manager)	PREPARED (Test Engineer)
BY	Wei Huanbin	Lin Jiekai
DATE	2017-11-03	2017-11-03

Reliability Laboratory of Huawei Technologies Co., Ltd.

(Global Compliance and Testing Center of Huawei Technologies Co., Ltd)

Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Tel: +86 755 28780808 Fax: +86 755 89652518

※ ※ Notice ※ ※

1. The laboratory has passed the accreditation by China National Accreditation Service for Conformity Assessment (CNAS). The accreditation number is L0310.

2. The laboratory has passed the accreditation by The American Association for Laboratory Accreditation (A2LA). The accreditation number is 2174.01 & 2174.02 & 2174.03

3. The laboratory (Reliability Lab of Huawei Technologies Co., Ltd) is also named “Global Compliance and Testing Center of Huawei Technologies Co., Ltd”, the both names have coexisted since 2009.

4. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.

5. The test report is invalid if there is any evidence of erasure and/or falsification.

6. The test report is only valid for the test samples.

7. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

Copyright © Huawei Technologies Co., Ltd

Table of Contents

1 General Information 6
1.1 Statement of Compliance 6
1.2 RF exposure limits 7
1.3 EUT Description 8
1.3.1 General Description 10
1.3.2 Power reduction specification 11
1.4 Test specification(s) 11
1.5 Testing laboratory 11
1.6 Applicant and Manufacturer 11
1.7 Application details 12
1.8 Ambient Condition 12
2 SAR Measurement System 13
2.1 SAR Measurement Set-up 13
2.2 Test environment 14
2.3 Data Acquisition Electronics description 14
2.4 Probe description 15
2.5 Phantom description 16
2.6 Device holder description 17
2.7 Test Equipment List 18
3 SAR Measurement Procedure 20
3.1 Scanning procedure 20
3.2 Spatial Peak SAR Evaluation 21
3.3 Data Storage and Evaluation 22
4 System Verification Procedure 24
4.1 Tissue Verification 24
4.2 System Check 27
4.3 System check Procedure 28
5 SAR measurement variability and uncertainty 29
5.1 SAR measurement variability 29
5.2 SAR measurement uncertainty 29
6 SAR Test Configuration 30
6.1 Test Positions Configuration 30
6.1.1 General considerations 30
6.1.2 Head Exposure Condition 30
6.1.3 Body-worn Exposure Condition 31
6.1.4 Hotspot Exposure Condition 31
6.2 3G SAR Test Reduction Procedure 32
6.3 GSM Test Configuration 32
6.4 UMTS Test Configuration 33
6.5 LTE Test Configuration 39
6.6 WiFi Test Configuration 41
6.6.1 Initial Test Position Procedure 41
6.6.2 Initial Test Configuration Procedure 41
6.6.3 Sub Test Configuration Procedure 41
6.6.4 WiFi 2.4G SAR Test Procedures 42
7 SAR Measurement Results 43
7.1 Conducted power measurements 43
7.1.1 Conducted power measurements of GSM850 44
7.1.2 Conducted power measurements of GSM1900 45
7.1.3 Conducted power measurements of UMTS Band II 46
7.1.4 Conducted power measurements of UMTS Band IV 48
7.1.5 Conducted power measurements of UMTS Band V 50
7.1.6 Conducted power measurements of LTE Band II 51
7.1.7 Conducted power measurements of LTE Band IV 57

Copyright © Huawei Technologies Co., Ltd

7.1.8 Conducted power measurements of LTE Band V 63
7.1.9 Conducted power measurements of LTE Band VII 65
7.1.10 Conducted power measurements of WiFi 2.4G 67
7.1.11 Conducted power measurements of BT 67
7.2 SAR measurement Results 68
7.2.1 SAR measurement Result of GSM850 70
7.2.2 SAR measurement Result of GSM1900 72
7.2.3 SAR measurement Result of UMTS Band II 73
7.2.4 SAR measurement Result of UMTS Band IV 74
7.2.5 SAR measurement Result of UMTS Band V 75
7.2.6 SAR measurement Result of LTE Band II 76
7.2.7 SAR measurement Result of LTE Band IV 78
7.2.8 SAR measurement Result of LTE Band V 80
7.2.9 SAR measurement Result of LTE Band VII 82
7.2.10 SAR measurement Result of WiFi 2.4G 84
7.3 Multiple Transmitter Evaluation 86
7.3.1 Stand-alone SAR test exclusion 87
7.3.2 Simultaneous Transmission Possibilities 88
7.3.3 SAR Summation Scenario 89
7.3.4 Simultaneous Transmission Conclusion 89
Appendix A. System Check Plots 90
Appendix B. SAR Measurement Plots 90
Appendix C. Calibration Certificate 90
Appendix D. Photo documentation 90

Copyright © Huawei Technologies Co., Ltd

※ ※ Modified History ※ ※

REV.	DESCRIPTION	ISSUED DATE	REMARK
Rev.1.0	Initial Test Report Release.	2017-11-03	Lin Jiekai

Copyright © Huawei Technologies Co., Ltd

1 General Information

1.1 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for SLA-L03 are as below Table 1.

Band	Max Reported SAR(W/kg)		
	1-g Head SAR	1-g Body-worn SAR *	1-g Hotspot SAR
GSM850	0.42	0.69	0.69
GSM 1900	0.18	0.35	0.61
UMTS B2	0.55	0.55	0.73
UMTS B4	0.25	0.49	**0.91**
UMTS B5	0.39	0.52	0.52
LTE B2	0.23	0.52	0.55
LTE B4	0.15	0.33	0.69
LTE B5	0.31	0.42	0.42
LTE B7	0.55	**0.82**	0.83
WiFi 2.4G	**0.88**	0.21	0.21
BT	/	/	/
The highest reported SAR for head, body-worn, hotspot and simultaneous transmission exposure conditions are 0.88W/kg, 0.82W/kg, 0.91W/kg and 1.30 W/kg respectively per KDB690783 D01.			

Table 1:Summary of test result

Note:

1)* For body worn operation, this device has been tested and meets FCC RF exposure guidelines when used with any accessory that contains no metal and that positions the handset a minimum of 15mm from the body. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

2)* Per KDB 648474, as the separation distance required for body-worn accessory testing is greater than or equal to that tested for hotspot mode, the more conservative 10mm hotspot SAR data used to support body-worn accessory SAR compliance for those frequency bands which do not support hotspot power reduction.

The device is in compliance with Specific Absorption Rate（SAR）for general population/uncontraolled exposure limits according to the FCC rule §2.1093, the ANSI C95.1-1992/IEEE C95.1-1991, the NCRP Report Number 86 for uncontrolled environment, according to the Industry Canada Radio Standards Specification RSS-102 for General Population/Uncontrolled exposure, and had been tested in accordance with the measurement methods and procedures specified in IEEE Std 1528-2013.

Copyright © Huawei Technologies Co., Ltd

1.2 RF exposure limits

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational
Spatial Peak SAR* (Brain/Body/Arms/Legs)	**1.60 W/kg**	8.00 W/kg
Spatial Average SAR** (Whole Body)	0.08 W/kg	0.40 W/kg
Spatial Peak SAR*** (Hands/Feet/Ankle/Wrist)	4.00 W/kg	20.00 W/kg

Table 2: RF exposure limits

The limit applied in this test report is shown in **bold** letters

Notes:

* The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

** The Spatial Average value of the SAR averaged over the whole body.

*** The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation.

Copyright © Huawei Technologies Co., Ltd

1.3 EUT Description

Device Information:			
Product Name:	Smart Phone		
Model:	SLA-L03		
FCC ID :	QISSLA-L03		
SN.:	1#：FWUBB17420500001 2#：FWUBB17420500004 3#：FWUBB17420500019 4#：FWUBB17420500015 5#：FWUBB17420500013		
Device Type :	Portable device		
Device Phase:	Identical Prototype		
Exposure Category:	Uncontrolled environment / general population		
Hardware Version :	HL1SLAM		
Software Version :	SLA-L03C900B170		
Antenna Type :	Internal antenna		
Others Accessories	Headset		
Device Operating Configurations:			
Supporting Mode(s)	GSM 850/1900, UMTS Band II/IV/V, LTE Band II/IV/V/VII, WiFi 2.4G, BT		
Test Modulation	GSM(GMSK/8PSK), UMTS(QPSK), LTE(QPSK/16QAM), WiFi(DSSS/OFDM), BT(GFSK)		
Device Class	B		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	GSM850	824-849	869-894
	PCS1900	1850-1910	1930-1990
	UMTS Band II	1850-1910	1930-1990
	UMTS Band IV	1710–1755	2110–2155
	UMTS Band V	824-849	869-894
	LTE Band II	1850-1910	1930-1990
	LTE Band IV	1710–1755	2110–2155
	LTE Band V	824-849	869-894
	LTE Band VII	2500-2570	2620-2690
	WiFi 2.4G	2412-2462	
	BT	2402-2480	
GPRS Multislot Class(12)	Max Number of Timeslots in Uplink:		4
	Max Number of Timeslots in Downlink:		4
	Max Total Timeslot:		5
EGPRS Multislot Class(12)	Max Number of Timeslots in Uplink:		4
	Max Number of Timeslots in Downlink:		4
	Max Total Timeslot:		5
HSDPA UE Category	14		
HSUPA UE Category	7		
DC-HSDPA UE Category	24		
Power Class:	4,tested with power level 5(GSM850)		
	1,tested with power level 0(GSM1900)		
	3, tested with power control “all 1”(UMTS Band II)		
	3, tested with power control “all 1”(UMTS Band IV)		
	3, tested with power control “all 1”(UMTS Band V)		
	3, tested with power control all Max.(LTE Band II)		

Copyright © Huawei Technologies Co., Ltd

	3, tested with power control all Max.(LTE Band IV)
	3, tested with power control all Max.(LTE Band V)
	3, tested with power control all Max.(LTE Band VII)
Test Channels (low-mid-high):	128-190-251(GSM850)
	512-661-810(GSM1900)
	9262-9400-9538(UMTS Band II)
	1312-1413-1513(UMTS Band IV)
	4132-4182-4233(UMTS Band V)
	18607-18900-19193(LTE Band II BW=1.4MHz)
	18615-18900-19185(LTE Band II BW=3MHz)
	18625-18900-19175(LTE Band II BW=5MHz)
	18650-18900-19150(LTE Band II BW=10MHz)
	18675-18900-19125 (LTE Band II BW=15MHz)
	18700-18900-19100(LTE Band II BW=20MHz)
	19957-20175-20393(LTE Band IV BW=1.4MHz)
	19965-20175-20385(LTE Band IV BW=3MHz)
	19975-20175-20375(LTE Band IV BW=5MHz)
	20000-20175-20350 (LTE Band IV BW=10MHz)
	20025-20175-20325 (LTE Band IV BW=15MHz)
	20050-20175-20300(LTE Band IV BW=20MHz)
	20407-20525-20643(LTE Band V BW=1.4MHz)
	20415-20525-20635(LTE Band V BW=3MHz)
	20425-20525-20625(LTE Band V BW=5MHz)
	20450-20525-20600(LTE Band V BW=10MHz)
	20775-21100-21425(LTE Band VII BW=5MHz)
	20800-21100-21400(LTE Band VII BW=10MHz)
	20825-21100-21375(LTE Band VII BW=15MHz)
	20850-21100-21350 (LTE Band VII BW=20MHz)
	802.11b/g/n 20M:1-6-11
	BT: 0-19-39-78

Table 3:Device information and operating configuration

Copyright © Huawei Technologies Co., Ltd

1.3.1 General Description

SLA-L03 is a GSM/WCDMA/LTE /WLAN/ Bluetooth mobile phone. The GSM frequency band include GSM850,GSM900, DCS1800,PCS1900. The UMTS frequency band is Band I, Band II, Band IV ,Band V, Band VIII. The LTE frequency band is Band 2, Band 4, Band 5, Band 7, Band 28. The Mobile Phone implements, such functions as RF signal receiving/transmitting, LTE/UMTS and GSM/GPRS/EDGE protocol processing, support for MP3 and MPEG4 play, support for pictures and video shooting, support for EDGE, GPRS,Bluetooth ,FM,GPS.

Difference descripiton:

The difference between model SLA-L03 (Old) and model SLA-L03 (New) is show in the below table:

Model	SLA-L03 (Old)	SLA-L03 (New)
Brand	HUAWEI	HUAWEI
Frequency	the same	the same
SIM Card	the same	the same
Hardware Version	the same	the same
Software Version	Different	Different
Dimensions	the same	the same
Appearance	the same	the same
Main Antenna	the same	the same
BT/Wi-Fi Antenna	the same	the same
Div Antenna	the same	the same
Hotspot on Power Reduction	Not support	Support GSM1900，WCDMA B2/B4，LTE B2/B4.

According to the difference description above:

1) For GSM1900, WCDMA B2/B4 and LTE B2/B4 that support power reduction triggered by hotspot, new full Body/Hotspot SAR test is performed on SLA-L03 (New).

2) For other 2G/3G/4G frequency band and exposure condition, SLA-L03 (New) shares the same test data of SLA-L03 (Old) (report NO.: I17N00776-SAR) and test the SAR worst case for the each other frequency band.

3) Conducted power measurement results are updated accordingly.

4) Fot the same WIFI and BT bands, SLA-L03 (New) shares the same test data of SLA-L03 (Old) (report NO.: I17N00776-SAR).

Accessory Information :

Accessory	Manufacturer	Description
Battery	Sunwoda Electronic Co., Ltd. Huizhou Desay Battery Co., Ltd.	Battery Model: HB405979ECW Rated capacity: 2920mAh Nominal Voltage: ⎓ +3.82V Charging Voltage: ⎓ +4.4V

Copyright © Huawei Technologies Co., Ltd

1.3.2 Power reduction specification

A fixed level power reduction is applied for some frequency bands when hotspot mode becomes active. When the hotspot is disabled, the power value will be recovered.
The following tables summerize the key power reduction information.The detailed full power and reduced tune-up specifications and conducted power measurement results are provided in Section 7 of this report.

Band	Power Reduction Level Amount (dB)	
	Main Antenna	
	Hotspot is active	Hotspot is disabled
GSM1900	4.5	0.0
UMTS Band II	3.2	0.0
UMTS Band IV	3.0	0.0
LTE Band II	2.5	0.0
LTE Band IV	2.5	0.0

1.4 Test specification(s)

ANSI C95.1-1992 /IEEE C95.1-1991	Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.
IEEE Std 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
KDB941225 D01	3G SAR Procedures v03r01
KDB941225 D05	SAR for LTE Devices v02r05
KDB941225 D06	Hotspot SAR v02r01
KDB447498 D01	General RF Exposure Guidance v06
KDB648474 D04	Handsets SAR v01r03
KDB248227 D01	SAR Guidance for IEEE 802 11 Wi-Fi SAR v02r02
KDB865664 D01	SAR measurement 100 MHz to 6 GHz v01r04
KDB865664 D02	SAR Reporting v01r02
KDB690783 D01	SAR Listings on Grants v01r03

1.5 Testing laboratory

Test Site	The Reliability Laboratory of Huawei Technologies Co., Ltd.
Test Location	Section G1,Huawei Base Bantian, Longgang District, Shenzhen 518129, P.R. China
Telephone	+86 755 28780808
Fax	+86 755 89652518
State of accreditation	The Test laboratory (area of testing) is accredited according to ISO/IEC 17025. CNAS Registration number: L0310 A2LA TESTING CERT #2174.01 & 2174.02 & 2174.03

1.6 Applicant and Manufacturer

Company Name	HUAWEI TECHNOLOGIES CO., LTD
Address	Administration Building, Headquarters of Huawei Technologies Co., Ltd.,

Copyright © Huawei Technologies Co., Ltd

	Bantian, Longgang District, Shenzhen, 518129, P.R.C

1.7 Application details

Start Date of test	2017-09-28
End Date of test	2017-10-11

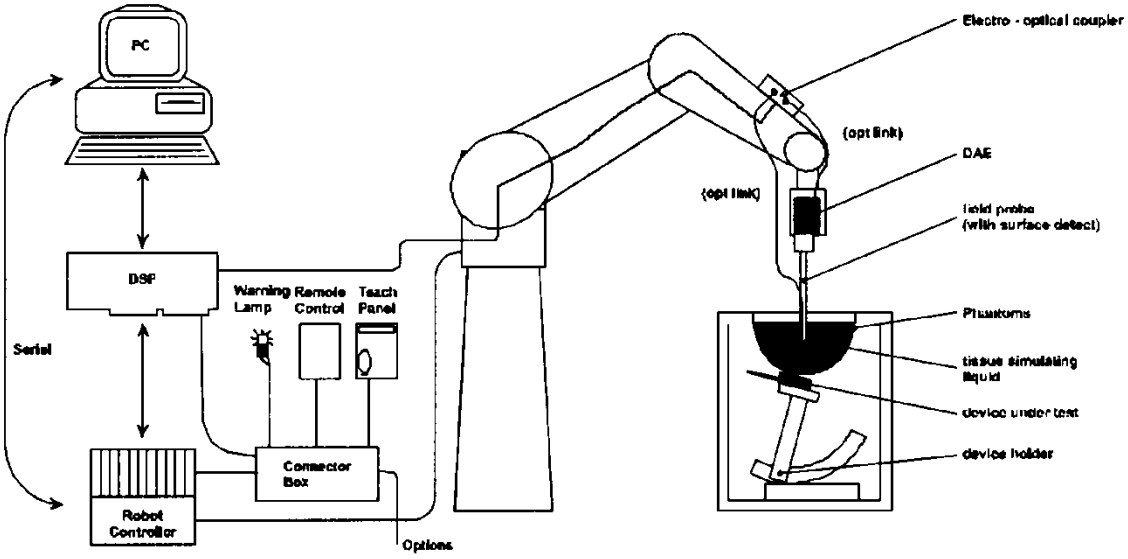
1.8 Ambient Condition

Ambient temperature	20°C – 24°C
Relative Humidity	30% – 70%

Copyright © Huawei Technologies Co., Ltd

2 SAR Measurement System

2.1 SAR Measurement Set-up



The DASY system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).

- A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.

- A data acquisition electronic (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- A unit to operate the optical surface detector which is connected to the EOC.
- The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY measurement server.
- The DASY measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. A computer operating Windows 7.
- DASY software and SEMCAD data evaluation software.
- Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
- The generic twin phantom enabling the testing of left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- System check dipoles allowing to validate the proper functioning of the system.

Copyright © Huawei Technologies Co., Ltd

2.2 Test environment

The DASY measurement system is placed at the head end of a room with dimensions:
5 x 2.5 x 3 m³, the SAM phantom is placed in a distance of 75 cm from the side walls and 1.1m from the rear wall. Above the test system a 1.5 x 1.5 m² array of pyramid absorbers is installed to reduce reflections from the ceiling.
Picture 1 of the photo documentation shows a complete view of the test environment.
The system allows the measurement of SAR values larger than 0.005 mW/g.

2.3 Data Acquisition Electronics description

The data acquisition electronics (DAE) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converte and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.

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

DAE4

Input Impedance	200MOhm	
The Inputs	symmetrical and floating	
Common mode rejection	above 80 dB	

Copyright © Huawei Technologies Co., Ltd

2.4 Probe description

These probes are specially designed and calibrated for use in liquids with high permittivities. They should not be used in air, since the spherical isotropy in air is poor (±2 dB). The dosimetric probes have special calibrations in various liquids at different frequencies.

Isotropic E-Field Probe ES3DV3 for Dosimetric Measurements

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	ISO/IEC 17025 calibration service available.	
Frequency	10 MHz to 4 GHz; Linearity: ± 0.2 dB (30 MHz to 4 GHz)	
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in tissue material (rotation normal to probe axis)	
Dynamic range	5 µW/g to > 100 mW/g; Linearity: ± 0.2 dB	
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	
Application	General dosimetry up to 4 GHz Dosimetry in strong gradient fields Compliance tests of mobile phones	

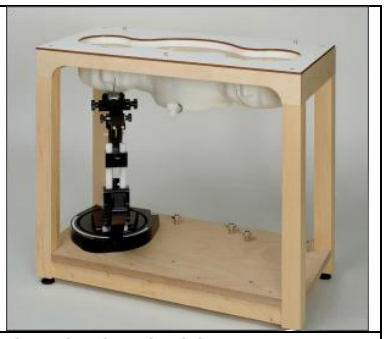
Isotropic E-Field Probe EX3DV4 for Dosimetric Measurements

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Calibration	ISO/IEC 17025 calibration service available.	
Frequency	10 MHz to >6 GHz; Linearity: ± 0.2 dB (30 MHz to 6 GHz)	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic range	10 µW/g to > 100 mW/g; Linearity: ± 0.2 dB(noise:typically<1µW/g)	
Dimensions	Overall length: 337 mm (Tip:20 mm) Tip diameter:2.5 mm (Body:12 mm) Typical distance from probe tip to dipole centers: 1mm	
Application	High precision dosimetric measurements in any exposure scenario(e.g.,very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%	

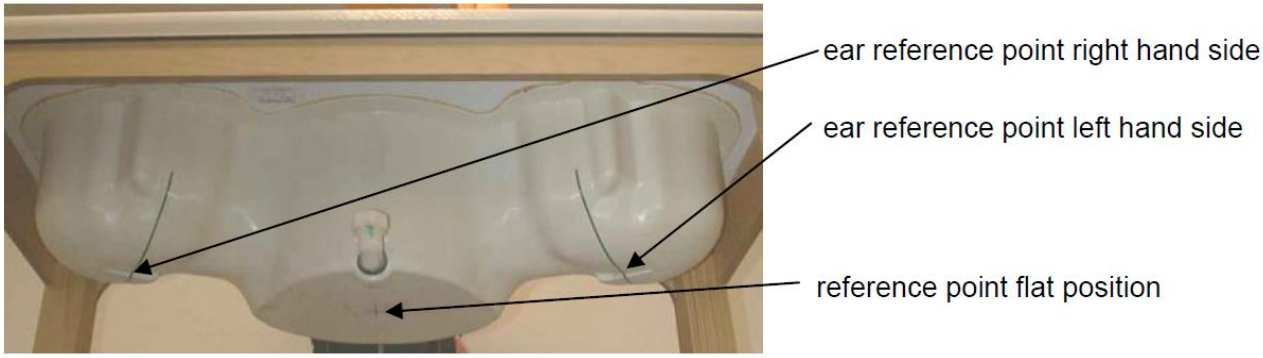
Copyright © Huawei Technologies Co., Ltd

2.5 Phantom description

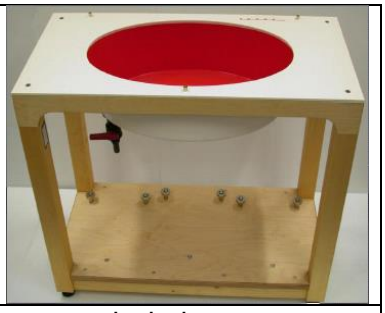
SAM Twin Phantom

Shell Thickness	2mm±0.2mm;The ear region:6.0±0.2mm	
Filling Volume	Approximately 25 liters	
Dimensions	Length:1000mm; Width:500mm; Height: adjustable feet	
Measurement Areas	Left hand Right hand Flat phantom	
The bottom plate contains three pairs of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to cover the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. Free space scans of devices on top of this phantom cover are possible. Three reference marks are provided on the phantom counter. These reference marks are used to teach the absolute phantom position relative to the robot.		

The following figure shows the definition of reference point:



ELI4 Phantom

Shell Thickness	2mm±0.2mm	
Filling Volume	Approximately 30 liters	
Dimensions	Major axis:600mm; Minor axis:400mm;	
Measurement Areas	Flat phantom	
The ELI4 phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30MHz to 6GHz. ELI4 is fully compatible with the latest draft of the standard IEC 62209-2 and all known tissue simulating liquids.		

The phantom shell material is resistant to all ingredients used in the tissue-equivalent liquid recipes. The shell of the phantom including ear spacers is constructed from low permittivity and low loss material, with a relative permittivity 2≤εr≤5 at ≤3 GHz,3≤ εr≤4 at >3 GHz and and a loss tangent ⩽0.05.

Copyright © Huawei Technologies Co., Ltd

Modular Triple Flat Phantom

Shell Thickness (bottom plate)	2mm±0.2mm	
Filling Volume (Module)	approx. 8.1 liters (filling height: 155 mm)	
Dimensions	Length: 292 mm Width: 178 mm Height: 178 mm Useable area: 280 × 175 mm	
Measurement Areas	Flat phantom	
The Modular Flat Phantom consists of three identical modules that can be installed and removed separately without emptying the liquid. It is used for compliance testing of small wireless devices in body-worn configurations according to IEC 62209-2, etc.		

2.6 Device holder description

The DASY device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65°. The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. This device holder is used for standard mobile phones or PDA's only. If necessary an additional support of polystyrene material is used.

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity ε =3 and loss tangent σ =0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.
The device holder permits the device to be positioned with a tolerance of ±1° in the tilt angle.

Larger DUT's (e.g. notebooks) cannot be tested using this device holder. Instead a support of bigger polystyrene cubes and thin polystyrene plates is used to position the DUT in all relevant positions to find and measure spots with maximum SAR values.
Therefore those devices are normally only tested at the flat part of the SAM.

Copyright © Huawei Technologies Co., Ltd

2.7 Test Equipment List

This table gives a complete overview of the SAR measurement equipment.
Devices used during the test described are marked ☒

	Manufacturer	Device	Type	Serial number	Date of last calibration	Valid period
☒	SPEAG	Dosimetric E-Field Probe	EX3DV4	3578	2017-05-05	One year
☒	SPEAG	Dosimetric E-Field Probe	EX3DV4	3744	2017-07-24	One year
☒	SPEAG	Data acquisition electronics	DAE4	1236	2017-07-21	One year
☒	SPEAG	Data acquisition electronics	DAE4	852	2017-04-27	One year
☒	SPEAG	835 MHz Dipole	D835V2	4d059	2016-04-20	Three years
☐	SPEAG	900 MHz Dipole	D900V2	1d192	2016-02-02	Three years
☒	SPEAG	1750 MHz Dipole	D1750V2	1123	2017-07-27	Three years
☒	SPEAG	1900 MHz Dipole	D1900V2	5d142	2017-06-21	Three years
☐	SPEAG	2000 MHz Dipole	D2000V2	1036	2016-11-23	Three years
☐	SPEAG	2300 MHz Dipole	D2300V2	1020	2015-09-21	Three years
☐	SPEAG	2450 MHz Dipole	D2450V2	978	2016-02-08	Three years
☒	SPEAG	2600 MHz Dipole	D2600V2	1021	2017-07-21	Three years
☒	SPEAG	Software	DASY5	N/A	NCR	NCR
☒	SPEAG	Twin Phantom	SAM2	TP-1474	NCR	NCR
☒	SPEAG	Twin Phantom	SAM3	TP-1597	NCR	NCR
☒	SPEAG	Twin Phantom	SAM4	TP-1620	NCR	NCR
☒	R & S	Universal Radio Communication Tester	CMU 200	111379	2016-12-29	One year
☒	R & S	WideBand Radio Communication Tester	CMW 500	126855	2017-05-15	One year
☒	Agilent	Network Analyser	E5071C	MY46213349	2016-12-30	One year
☒	Agilent	Dielectric Probe Kit	85070E	2484	NCR	NCR
☒	Agilent	Signal Generator	N5181A	MY50145341	2016-11-14	One year
☒	MINI-CIRCUITS	Amplifier	ZHL-42W	QA1402001	NCR	NCR
☒	AR	Directional Coupler	DC7144A M1	0423264	2017-04-12	One year
☐	MINI-CIRCUITS	Amplifier	ZVE-8G+	N523101139	NCR	One year
☐	Agilent	Dual Directional Coupler	772D	MY52180173	2017-01-03	One year
☒	Agilent	Power Meter	E4417A	MY54100027	2017-04-10	One year
☒	Agilent	Power Meter Sensor	E9321A	MY54130007	2017-04-10	One year
☒	Agilent	Power Meter Sensor	E9321A	MY54130001	2017-04-10	One year

Note: 1) Per KDB865664D01 requirements for dipole calibration, the test laboratory has adopted three-year extended calibration interval. Each measured dipole is expected to evaluate with the following criteria at least on annual interval in Appendix C.

a) There is no physical damage on the dipole;
b) System check with specific dipole is within 10% of calibrated value;
c) The most recent return-loss result, measured at least annually, deviates by no more than 20% from the previous measurement.
d) The most recent measurement of the real or imaginary parts of the impedance, measured at least annually is within 5Ω from the previous measurement.

Copyright © Huawei Technologies Co., Ltd

2) Network analyzer probe calibration against air, distilled water and a shorting block performed before measuring liquid parameters.
3) *All the equipments are within the valid period when the tests are performed.

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd

3 SAR Measurement Procedure

3.1 Scanning procedure

The DASY installation includes predefined files with recommended procedures for measurements and system check. They are read-only document files and destined as fully defined but unmeasured masks. All test positions (head or body-worn) are tested with the same configuration of test steps differing only in the grid definition for the different test positions.

- The “reference” and “drift” measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT’s output power and should vary max. +/- 5 %.

- The “surface check” measurement tests the optical surface detection system of the DASY5/6 system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the difference between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above ± 0.1mm). To prevent wrong results tests are only executed when the liquid is free of air bubbles. The difference between the optical surface detection and the actual surface depends on the probe and is specified with each probe. (It does not depend on the surface reflectivity or the probe angle to the surface within ± 30°.)

- The “area scan” measures the SAR above the DUT or verification dipole on a parallel plane to the surface. It is used to locate the approximate location of the peak SAR with 2D spline interpolation. The robot performs a stepped movement along one grid axis while the local electrical field strength is measured by the probe. The probe is touching the surface of the SAM during acquisition of measurement values. The standard scan uses large grid spacing for faster measurement. Standard grid spacing for head measurements is 15 mm in x- and y- dimension(≤2GHz)，12 mm in x- and y-dimension(2-4 GHz) and 10mm in x- and y- dimension(4-6GHz). If a finer resolution is needed, the grid spacing can be reduced. Grid spacing and orientation have no influence on the SAR result. For special applications where the standard scan method does not find the peak SAR within the grid, e.g. mobile phones with flip cover, the grid can be adapted in orientation.
  Results of this coarse scan are shown in Appendix B.

- A “zoom scan” measures the field in a volume around the 2D peak SAR value acquired in the previous “coarse” scan. This is a fine grid with maximum scan spatial resolution: Δx_{zoom}, Δy_{zoom}≤ 2GHz - ≤8mm, 2-4GHz - ≤5 mm and 4-6 GHz-≤4mm; Δz_{zoom} ≤3GHz - ≤5 mm, 3-4 GHz- ≤4mm and 4-6GHz-≤2mm where the robot additionally moves the probe along the z-axis away from the bottom of the Phantom. DASY is also able to perform repeated zoom scans if more than 1 peak is found during area scan. In this document, the evaluated peak 1g and 10g averaged SAR values are shown in the 2D-graphics in Appendix B. Test results relevant for the specified standard (see chapter 1.4.)are shown in table form form in chapter 7.2.

- A Z-axis scan measures the total SAR value at the x-and y-position of the maximum SAR value found during the cube scan. The probe is moved away in z-direction from the bottom of the SAM phantom in 2 mm steps. This measurement shows the continuity of the liquid and can - depending in the field strength – also show the liquid depth. A z-axis scan of the measurement with maximum SAR value is shown in Appendix B.

Copyright © Huawei Technologies Co., Ltd

The following table summarizes the area scan and zoom scan resolutions per FCC KDB 865664D01:

Frequency	Maximun Area Scan resolution (Δx_{area}, Δy_{area})	Maximun Zoom Scan spatial resolution (Δx_{Zoom}, Δy_{Zoom})	Maximun Zoom Scan spatial resolution			Minimum zoom scan volume (x,y,z)
			Uniform Grid	Graded Grad		
			$\Delta z_{Zoom}(n)$	$\Delta z_{Zoom}(1)$*	$\Delta z_{Zoom}(n>1)$*	
≤2GHz	≤15mm	≤8mm	≤5mm	≤4mm	≤1.5*$\Delta z_{Zoom}(n-1)$	≥30mm
2-3GHz	≤12mm	≤5mm	≤5mm	≤4mm	≤1.5*$\Delta z_{Zoom}(n-1)$	≥30mm
3-4GHz	≤12mm	≤5mm	≤4mm	≤3mm	≤1.5*$\Delta z_{Zoom}(n-1)$	≥28mm
4-5GHz	≤10mm	≤4mm	≤3mm	≤2.5mm	≤1.5*$\Delta z_{Zoom}(n-1)$	≥25mm
5-6GHz	≤10mm	≤4mm	≤2mm	≤2mm	≤1.5*$\Delta z_{Zoom}(n-1)$	≥22mm

3.2 Spatial Peak SAR Evaluation

The spatial peak SAR - value for 1 and 10 g is evaluated after the Cube measurements have been done. The basis of the evaluation are the SAR values measured at the points of the fine cube grid consisting of 5 x 5 x 7 points(with 8mm horizontal resolution) or 7 x 7 x 7 points(with 5mm horizontal resolution) or 8 x 8 x 7 points(with 4mm horizontal resolution). The algorithm that finds the maximal averaged volume is separated into three different stages.

- The data between the dipole center of the probe and the surface of the phantom are extrapolated. This data cannot be measured since the center of the dipole is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is about 1 mm (see probe calibration sheet). The extrapolated data from a cube measurement can be visualized by selecting 'Graph Evaluated'.

- The maximum interpolated value is searched with a straight-forward algorithm. Around this maximum the SAR - values averaged over the spatial volumes (1g or 10 g) are computed using the 3d-spline interpolation algorithm. If the volume cannot be evaluated (i.e., if a part of the grid was cut off by the boundary of the measurement area) the evaluation will be started on the corners of the bottom plane of the cube.

- All neighboring volumes are evaluated until no neighboring volume with a higher average value is found.

Extrapolation

The extrapolation is based on a least square algorithm [W. Gander, Computermathematik, p.168-180]. Through the points in the first 3 cm along the z-axis, polynomials of order four are calculated. These polynomials are then used to evaluate the points between the surface and the probe tip. The points, calculated from the surface, have a distance of 1 mm from each other.

Interpolation

The interpolation of the points is done with a 3d-Spline. The 3d-Spline is composed of three one-dimensional splines with the "Not a knot"-condition [W. Gander, Computermathematik, p.141-150] (x, y and z -direction) [Numerical Recipes in C, Second Edition, p.123ff].

Volume Averaging

At First the size of the cube is calculated. Then the volume is integrated with the trapezoidal algorithm. 8000 points (20x20x20) are interpolated to calculate the average.

Advanced Extrapolation

DASY uses the advanced extrapolation option which is able to compansate boundary effects on E-field probes.

Copyright © Huawei Technologies Co., Ltd

3.3 Data Storage and Evaluation

Data Storage

The DASY5 software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension "DAE4". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [mW/g], [mW/cm²], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

Data Evaluation by SEMCAD

The SEMCAD software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	$Norm_i$, a_{i0}, a_{i1}, a_{i2}
	- Conversion factor	$ConvF_i$
	- Diode compression point	Dcpi
Device parameters:	- Frequency	f
	- Crest factor	cf
Media parameters:	- Conductivity	σ
	- Density	ρ

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY5 components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics.

If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$Vi = Ui + Ui2 \bullet cf/dcpi$$

with	V_i	= compensated signal of channel i	(i = x, y, z)
	U_i	= input signal of channel i	(i = x, y, z)
	cf	= crest factor of exciting field	(DASY parameter)
	dcp_i	= diode compression point	(DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

Copyright © Huawei Technologies Co., Ltd

E-field probes: $E_i = (V_i / Norm_i \cdot ConvF)^{1/2}$

H-field probes: $H_i = (V_i)^{1/2} \cdot (a_{i0} + a_{i1}f + a_{i2}f^2)/f$

with V_i = compensated signal of channel i (i = x, y, z)

$Norm_i$ = sensor sensitivity of channel i (i = x, y, z) [mV/(V/m)^2] for E-field Probes

ConvF = sensitivity enhancement in solution

a_{ij} = sensor sensitivity factors for H-field probes

f = carrier frequency [GHz]

E_i = electric field strength of channel i in V/m

H_i = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

Etot = (Ex2 + EY2 + Ez2)1/2

The primary field data are used to calculate the derived field units.

$$SAR = (E_{tot}^2 \cdot \sigma) / (\rho \cdot 1000)$$

with SAR = local specific absorption rate in mW/g

E_{tot} = total field strength in V/m

σ = conductivity in [mho/m] or [Siemens/m]

ρ = equivalent tissue density in g/cm^3

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid.The power flow density is calculated assuming the excitation field to be a free space field.

$P_{pwe} = E_{tot}^2 / 3770$ or $P_{pwe} = H_{tot}^2 \cdot 37.7$

with P_{pwe} = equivalent power density of a plane wave in mW/cm^2

E_{tot} = total electric field strength in V/m

H_{tot} = total magnetic field strength in A/m

Copyright © Huawei Technologies Co., Ltd

4 System Verification Procedure

4.1 Tissue Verification

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectic parameter are within the tolerances of the specified target values. The measured conductivity and relative permittivity should be within ± 5% of the target values.

The following materials are used for producing the tissue-equivalent materials.

Ingredients (% of weight)	**Head Tissue**					
Frequency Band (MHz)	750	835	1750	1900	2450	2600
Water	39.2	41.45	52.64	55.242	62.7	55.242
Salt (NaCl)	2.7	1.45	0.36	0.306	0.5	0.306
Sugar	57.0	56.0	0.0	0.0	0.0	0.0
HEC	0.0	1.0	0.0	0.0	0.0	0.0
Bactericide	0.0	0.1	0.0	0.0	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0
DGBE	0.0	0.0	47.0	44.542	36.8	44.452
Ingredients (% of weight)	**Body Tissue**					
Frequency Band (MHz)	750	835	1750	1900	2450	2600
Water	50.3	52.4	69.91	69.91	73.2	64.493
Salt (NaCl)	1.60	1.40	0.13	0.13	0.04	0.024
Sugar	47.0	45.0	0.0	0.0	0.0	0.0
HEC	0.0	1.0	0.0	0.0	0.0	0.0
Bactericide	0.0	0.1	0.0	0.0	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0
DGBE	0.0	0.0	29.96	29.96	26.7	32.252

☒**Simulating Head Liquid (HBBL600-6000MHz), Manufactured by SPEAG:**

Ingredients	(% by weight)
Water	50-65%
Mineral oil	10-30%
Emulsifiers	8-25%
Sodium salt	0-1.5%

☒**Simulating Body Liquid(MBBL600-6000MHz),Manufactured by SPEAG:**

Ingredients	(% by weight)
Water	60-80%
Esters,Emulsifiers,Inhibitors	20-40%
Sodium salt	0-1.5%

Table 4: Tissue Dielectric Properties

Salt: 99+% Pure Sodium Chloride; Sugar: 98+% Pure Sucrose; Water: De-ionized, 16MΩ+ resistivity HEC: Hydroxyethyl Cellulose; DGBE: 99+% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol] Triton X-100(ultra pure): Polyethylene glycol mono [4-(1,1,3,3-tetramethylbutyl)phenyl]ether

Copyright © Huawei Technologies Co., Ltd

Tissue Type	Target Frequency	Target Tissue		Measured Tissue		Deviation (Within +/-5%)		Liquid Temp.	Test Date
		ε_r	σ[S/m]	ε_r	σ[S/m]	$\Delta\varepsilon_r$	Δσ		
835MHz Head	825	41.60	0.90	41.61	0.928	0.02%	3.06%	21.8°C	2017/9/28
	835	41.50	0.90	41.58	0.931	0.19%	3.39%		
	850	41.50	0.92	41.52	0.937	0.05%	1.80%		
1750MHz Head	1710	40.10	1.35	38.66	1.319	-3.59%	-2.30%	21.8°C	2017/9/28
	1730	40.10	1.36	38.61	1.328	-3.72%	-2.35%		
	1750	40.10	1.37	38.58	1.337	-3.79%	-2.41%		
	1800	40.00	1.40	38.54	1.366	-3.65%	-2.43%		
1900MHz Head	1850	40.00	1.40	38.85	1.400	-2.88%	0.00%	21.8°C	2017/9/29
	1880	40.00	1.40	38.80	1.418	-3.00%	1.29%		
	1900	40.00	1.40	38.78	1.427	-3.05%	1.93%		
	1910	40.00	1.40	38.77	1.433	-3.07%	2.36%		
2600MHz Head	2510	39.12	1.86	39.91	1.937	2.02%	4.14%	21.8°C	2017/9/29
	2535	39.10	1.89	39.87	1.958	1.97%	3.60%		
	2560	39.00	1.92	39.82	1.981	2.10%	3.34%		
	2600	39.00	1.96	39.75	2.014	1.92%	2.81%		
835MHz Body	825	55.20	0.97	54.25	0.950	-1.72%	-2.09%	21.8°C	2017/9/29
	835	55.20	0.97	54.22	0.955	-1.78%	-1.57%		
	850	55.20	0.99	54.17	0.961	-1.87%	-2.93%		
1750MHz Body	1710	53.50	1.46	54.53	1.406	1.93%	-3.70%	21.5°C	2017/9/30
	1730	53.50	1.48	54.54	1.417	1.94%	-4.26%		
	1750	53.40	1.49	54.54	1.430	2.13%	-4.03%		
	1800	53.30	1.52	54.51	1.472	2.27%	-3.16%		
1750MHz Body	1710	53.50	1.46	53.62	1.435	0.22%	-1.71%	22.0°C	2017/10/7
	1730	53.50	1.48	53.59	1.444	0.17%	-2.43%		
	1750	53.40	1.49	53.55	1.451	0.28%	-2.62%		
	1800	53.30	1.52	53.56	1.478	0.49%	-2.76%		
1900MHz Body	1850	53.30	1.52	51.95	1.479	-2.53%	-2.70%	21.8°C	2017/9/30
	1880	53.30	1.52	51.90	1.499	-2.63%	-1.38%		
	1900	53.30	1.52	51.87	1.510	-2.68%	-0.66%		
	1910	53.30	1.52	51.86	1.517	-2.70%	-0.20%		
2600MHz Body	2510	52.62	2.03	54.79	2.035	4.12%	0.25%	22.3°C	2017/10/11
	2535	52.59	2.07	54.70	2.059	4.01%	-0.53%		
	2560	52.57	2.09	54.61	2.085	3.88%	-0.24%		
	2600	52.50	2.16	54.47	2.124	3.75%	-1.67%		

Table 5:Measured Tissue Parameter

Note: 1）The dielectric parameters of the tissue-equivalent liquid should be measured under similar ambient conditions and within 2 °C of the conditions expected during the SAR evaluation to satisfy protocol requirements.

2）KDB 865664 was ensured to be applied for probe calibration frequencies greater than or equal to 50MHz of the EUT frequencies.

3）The above measured tissue parameters were used in the DASY software to perform interpolation via the DASY software to determine actual dielectric parameters at the test frequencies.

Copyright © Huawei Technologies Co., Ltd

The SAR test plots may slightly differ from the table above since the DASY rounds to three significant digits.

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd

4.2 System Check

The system check is performed for verifying the accuracy of the complete measurement system and performance of the software. The system check is performed with tissue equivalent material according to IEEE P1528 (described above). The following table shows system check results for all frequency bands and tissue liquids used during the tests(Graphic Plot(s) see Appendix A).

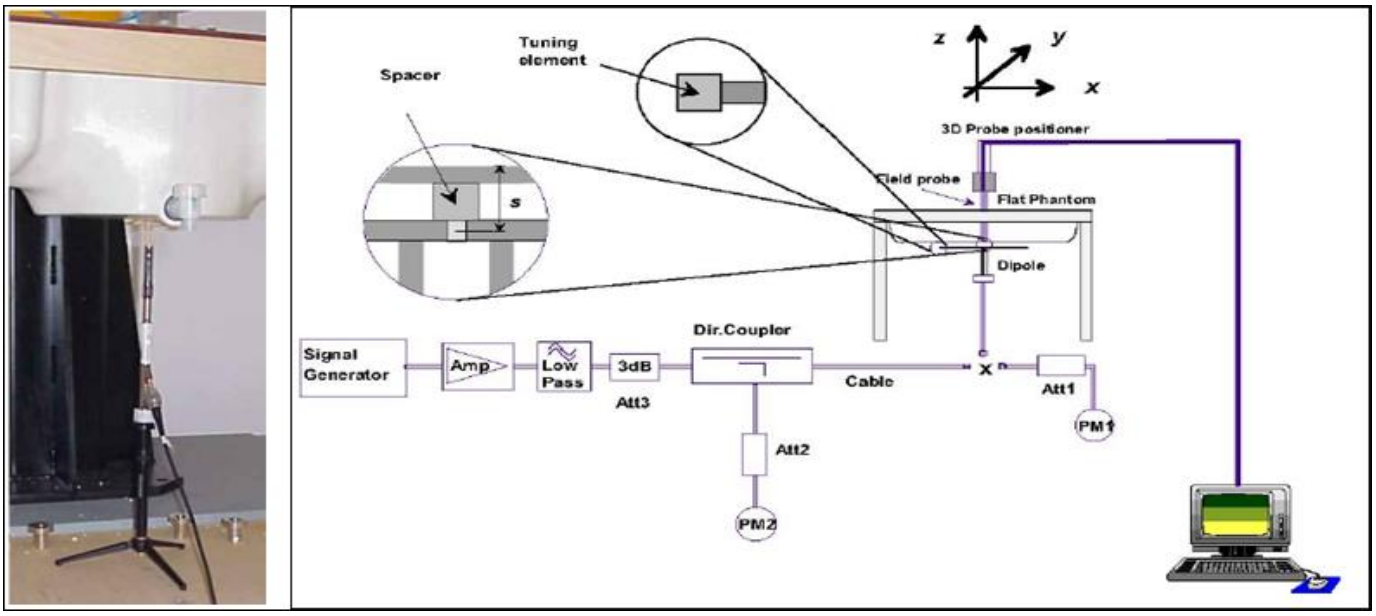
System Check	Target SAR (1W)		Measured SAR (Normalized to 1W)		Deviation (Within +/-10%)		Liquid Temp.	Test Date
	1-g (W/kg)	10-g (W/kg)	1-g (W/kg)	10-g (W/kg)	Δ1-g	Δ10-g		
835MHz Head	9.30	6.05	9.56	6.20	2.80%	2.48%	21.8°C	2017/9/28
1750MHz Head	36.60	19.40	38.96	20.64	6.45%	6.39%	21.8°C	2017/9/28
1900MHz Head	40.30	21.00	40.80	20.88	1.24%	-0.57%	21.8°C	2017/9/29
2600MHz Head	58.70	26.10	60.00	26.68	2.21%	2.22%	21.8°C	2017/9/29
835MHz Body	9.41	6.20	10.16	6.76	7.97%	9.03%	21.8°C	2017/9/29
1750MHz Body	36.40	19.40	35.40	18.72	-2.75%	-3.51%	21.5°C	2017/9/30
1750MHz Body	36.40	19.40	37.64	20.32	3.41%	4.74%	22°C	2017/10/7
1900MHz Body	40.40	21.30	43.60	22.72	7.92%	6.67%	21.8°C	2017/9/30
2600MHz Body	55.90	24.90	54.80	24.88	-1.97%	-0.08%	22.3°C	2017/10/11

Table 6:System Check Results

Copyright © Huawei Technologies Co., Ltd

4.3 System check Procedure

The system check is performed by using a system check dipole which is positioned parallel to the planar part of the SAM phantom at the reference point. The distance of the dipole to the SAM phantom is determined by a plexiglass spacer. The dipole is connected to the signal source consisting of signal generator and amplifier via a directional coupler, N-connector cable and adaption to SMA. It is fed with a power of 250 mW(below 3GHz) or 100mW(3-6GHz). To adjust this power a power meter is used. The power sensor is connected to the cable before the system check to measure the power at this point and do adjustments at the signal generator. At the outputs of the directional coupler both return loss as well as forward power are controlled during the system check to make sure that emitted power at the dipole is kept constant. This can also be checked by the power drift measurement after the test (result on plot).
System check results have to be equal or near the values determined during dipole calibration (target SAR in table above) with the relevant liquids and test system.



Copyright © Huawei Technologies Co., Ltd

5 SAR measurement variability and uncertainty

5.1 SAR measurement variability

Per KDB865664 D01 SAR measurement 100 MHz to 6 GHz v01r04, 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. The additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

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 ⩾ 0.80 W/kg, repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ⩾ 1.45 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 ⩾ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

The detailed repeated measurement results are shown in Section 7.2.

5.2 SAR measurement uncertainty

Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04,when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6) is applied to extremity and occupational exposure conditions.

Copyright © Huawei Technologies Co., Ltd

6 SAR Test Configuration

6.1 Test Positions Configuration

6.1.1 General considerations

Per IEEE 1528-2013, two imaginary lines on the handset were established: the vertical centerline and the horizontal line (See Figure 1).

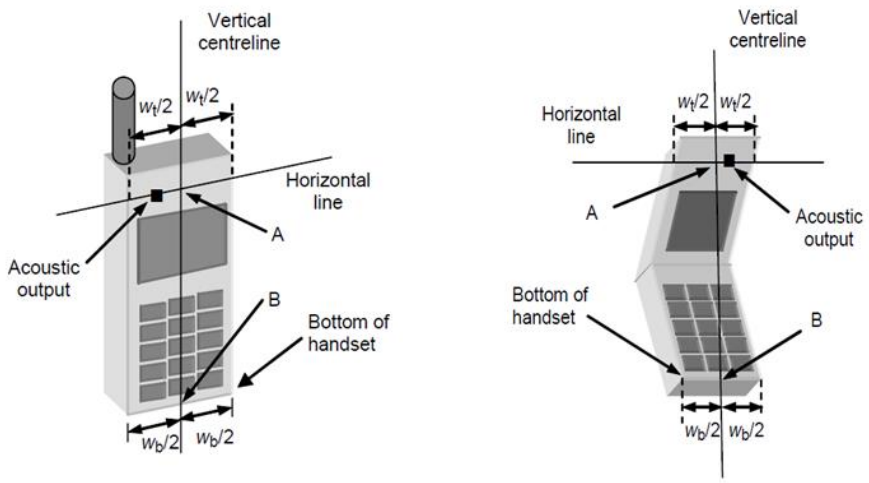


Figure 1 Hand Vertical Center & Horizontal Line Reference Points

6.1.2 Head Exposure Condition

Per IEEE 1528-2013, Head SAR measurements were made in the “cheek” position (See Figure 2) and the “tilt” position (See Figure 3). The device should be tested in both positions on left and right sides of the SAM phantom.

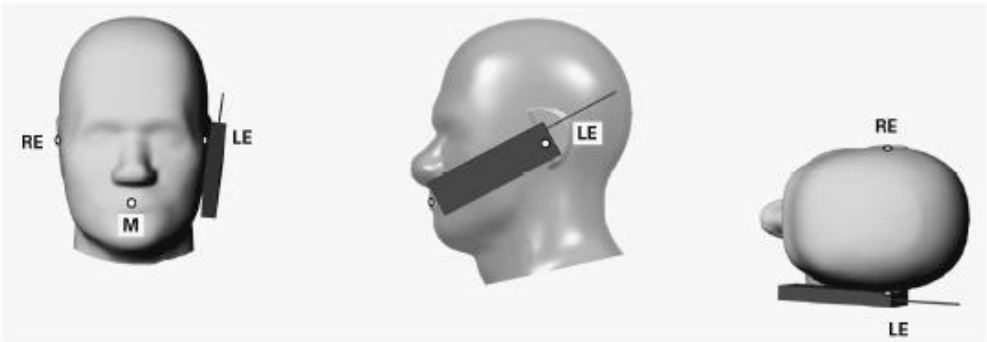


Figure 2 Front, Side and Top View of Cheek Position

Copyright © Huawei Technologies Co., Ltd

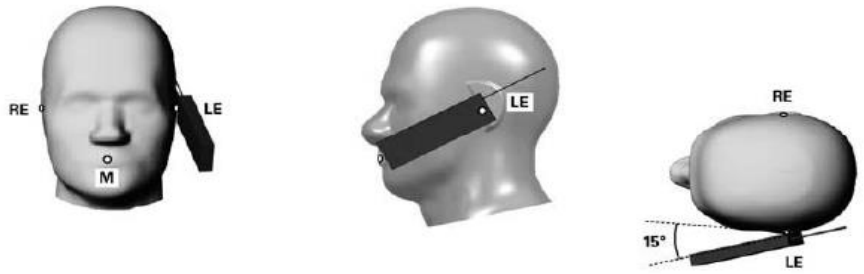


Figure 3 Front, Side and Top View of Tilt 15° Position

Note:

M Mouth reference point

LE Left ear reference point (ERP)

RE Right ear reference point(ERP)

6.1.3 Body-worn Exposure Condition

Body-worn operating configurations are tested with the holder attached to the device and positioned against a flat phantom with test separation distance of 15mm in a normal use configuration (See Figure 4). Per FCC KDB648474 D04v01, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

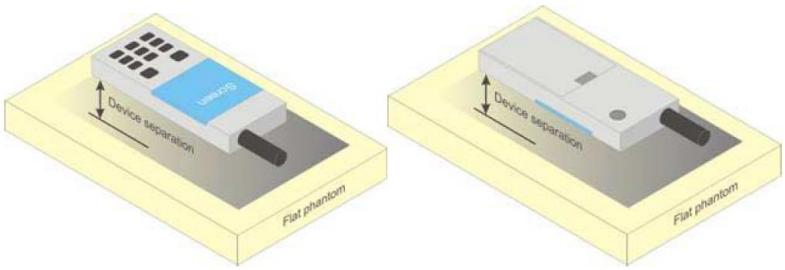


Figure 4 Test position for Body-Worn device

6.1.4 Hotspot Exposure Condition

Per FCC KDB 941225D06, The SAR test separation distance for hotspot mode is determined according to device form factor. When the overall length and width of a device is > 9 cm x 5 cm, a test separation distance of 10 mm is required for hotspot mode SAR measurements. A test separation distance of 5 mm or less is required for smaller devices. 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. The SAR results are used to determine simultaneous transmission SAR test exclusion for hotspot mode; otherwise, simultaneous transmission SAR measurement is required.

Copyright © Huawei Technologies Co., Ltd

6.2 3G SAR Test Reduction Procedure

Per KDB941225 D01v03, in the following procedures, the mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

6.3 GSM Test Configuration

SAR tests for GSM850 and GSM1900, a communication link is set up with a base station by air link. Using CMU200 the power lever is set to “5”and “0” in SAR of GSM850 and GSM1900. The tests in the band of GSM850 and GSM1900 are performed in the mode of GPRS/EGPRS function. Since the GPRS class is 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslot is 5. The EGPRS class is 12 for this EUT, it has at most 4 timeslots in uplink, and at most 4 timeslots in downlink, the maximum total timeslot is 5.

When SAR tests for EGPRS mode is necessary, GMSK modulation should be used to minimize SAR measurement error due to higher peak-to-average power (PAR) ratios inherent in 8-PSK.

Copyright © Huawei Technologies Co., Ltd

6.4 UMTS Test Configuration

1) Output Power Verification

Maximum output power is verified on the high, middle and low channels according to procedures described in section 5.2 of 3GPP TS 34.121, using the appropriate RMC or AMR with TPC (transmit power control) set to all “1’s” for WCDMA/HSDPA or by applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HSDPA, HSPA) are requied in the SAR report. All configurations that are not supported by the handset or cannot be measured due to technical or equipment limitations must be clearly identified.

2) WCDMA

a. Head SAR Measurements

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode.

b. Body SAR Measurements-

SAR for body-worn accessory configurations is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. The 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCHn configurations supported by the handset with 12.2 kbps RMC as the primary mode

3) HSDPA

SAR for body exposure configurations is measured according to the “Body SAR Measurements’’ procedures of 3G device. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

Per KDB941225 D01v03, the 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSDPA using the HSDPA body SAR procedures for the highest reported SAR body exposure configuration in 12.2 kbps RMC.

HSDPA should be configured according to UE category of a test device. The number of HS-DSCH/HS-PDSCHs, HAPRQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission condition, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4ms with a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. The β_c and β_d gain factors for DPCCH and DPDCH were set according to the values in the below table, β_{hs} for HS-DPCCH is set automatically to the correct value when ΔACK, ΔNACK, ΔCQI = 8. The variation of the β_c /β_d ratio causes a power reduction at sub-tests 2 - 4.

Copyright © Huawei Technologies Co., Ltd

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (1)	CM(dB)(2)	MPR (dB)
1	2/15	15/15	64	2/15	4/15	0.0	0
2	12/15(3)	15/15(3)	64	12/15(3)	24/15	1.0	0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: ΔACK, ΔNACK and ΔCQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$

Note 2 : CM=1 for β_c/β_d= 12/15, β_{hs}/β_c = 24/15. For all other combinations of DPDCH,DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 3 : 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 signalled gain factors for the reference TFC (TF1,TF1) to β_c = 11/15 and β_d = 15/15

Table 7: Sub-tests for UMTS Release 5 HSDPA

The measurements were performed with a Fixed Reference Channel (FRC) and H-Set 1 QPSK.

Parameter	Value
Nominal average inf. bit rate	534 kbit/s
Inter-TTI Distance	3 TTI's
Number of HARQ Processes	2 Processes
Information Bit Payload	3202 Bits
MAC-d PDU size	336 Bits
Number Code Blocks	1 Block
Binary Channel Bits Per TTI	4800 Bits
Total Available SMLs in UE	19200 SMLs
Number of SMLs per HARQ Process	9600 SMLs
Coding Rate	0.67
Number of Physical Channel Codes	5

Table 8:settings of required H-Set 1 QPSK acc. to 3GPP 34.121

HS-DSCH Category	Maximum HS-DSCH Codes Received	Minimum Inter-TTI Interval	Maximum HS-DSCH Transport Block Bits/HS-DSCH TTI	Total Soft Channel Bits
1	5	3	7298	19200
2	5	3	7298	28800
3	5	2	7298	28800
4	5	2	7298	38400
5	5	1	7298	57600
6	5	1	7298	67200
7	10	1	14411	115200
8	10	1	14411	134400
9	15	1	25251	172800
10	15	1	27952	172800
11	5	2	3630	14400
12	5	1	3630	28800
13	15	1	34800	259200
14	15	1	42196	259200
15	15	1	23370	345600
16	15	1	27952	345600

Table 9:HSDPA UE category

Copyright © Huawei Technologies Co., Ltd

4) HSUPA

SAR for body exposure configurations is measured according to the “Body SAR Measurements’’ procedures of 3G device. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

Per KDB941225 D01v03, the 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSPA using the HSPA body SAR procedures for the highest reported body exposure SAR configuration in 12.2 kbps RMC.

Due to inner loop power control requirements in HSDPA, a commercial communication test set should be used for the output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSDPA should be configured according to the values indicated below as well as other applicable procedures described in the ‘WCDMA Handset’ and ‘Release 5 HSDPA Data Device’ sections of 3G device.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}(1)	β_{ec}	β_{ed}	β_{ec} (SF)	β_{ed} (code)	CM(2) (dB)	MPR (dB)	AG(4) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1039/225	4	1	1.0	0.0	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	β_{ed1}:47/15 β_{ed2}:47/15	4	2	2.0	1.0	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	0.0	21	81

Note 1: Δ ACK, Δ NACK and Δ CQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$

Note 2: 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

Note 3 : 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 signalled gain factors for the reference TFC (TF1,TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$

Note 4 : 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 signalled gain factors for the reference TFC (TF1,TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$

Note 5 : Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g

Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Table 10:Subtests for UMTS Release 6 HSUPA

Copyright © Huawei Technologies Co., Ltd

UE E-DCH Category	Maximum E-DCH Codes Transmitted	Number of HARQ Processes	E-DCH TTI(ms)	Minimum Speading Factor	Maximum E-DCH Transport Block Bits	Max Rate (Mbps)
1	1	4	10	4	7110	0.7296
2	2	8	2	4	2798	1.4592
	2	4	10	4	14484	
3	2	4	10	4	14484	1.4592
4	2	8	2	2	5772	2.9185
	2	4	10	2	20000	2.00
5	2	4	10	2	20000	2.00
6 (No DPDCH)	4	8	10	2SF2&2SF4	11484	5.76
	4	4	2		20000	2.00
7 (No DPDCH)	4	8	2	2SF2&2SF4	22996	?
	4	4	10		20000	?
NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4.UE categories 1 to 6 support QPSK only. UE category 7 supports QPSK and 16QAM.(TS25.306-7.3.0).						

Table 11:HSUPA UE category

5) DC-HSDPA

SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel. 5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a Second serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

The following tests were completed according to procedures in section 7.3.13 of 3GPP TS 34.108 v9.5.0. A summary of these settings are illustrated below:

Downlink Physical Channels are set as per 3GPP TS34.121-1 v9.0.0 E.5.0

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

Call is set up as per 3GPP TS34.108 v9.5.0 sub clause 7.3.13

Copyright © Huawei Technologies Co., Ltd

The configurations of the fixed reference channels for HSDPA RF tests are described in 3GPP TS 34.121, annex C for FDD and 3GPP TS 34.122.

The measurements were performed with a Fixed Reference Channel (FRC) H-Set 12 with QPSK

Parameter	Value
Nominal average inf. bit rate	60 kbit/s
Inter-TTI Distance	1 TTI's
Number of HARQ Processes	6 Processes
Information Bit Payload	120 Bits
Number Code Blocks	1 Block
Binary Channel Bits Per TTI	960 Bits
Total Available SMLs in UE	19200 SMLs
Number of SMLs per HARQ Process	3200 SMLs
Coding Rate	0.15
Number of Physical Channel Codes	1

Table 12:settings of required H-Set 12 QPSK acc. to 3GPP 34.121

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 above.

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

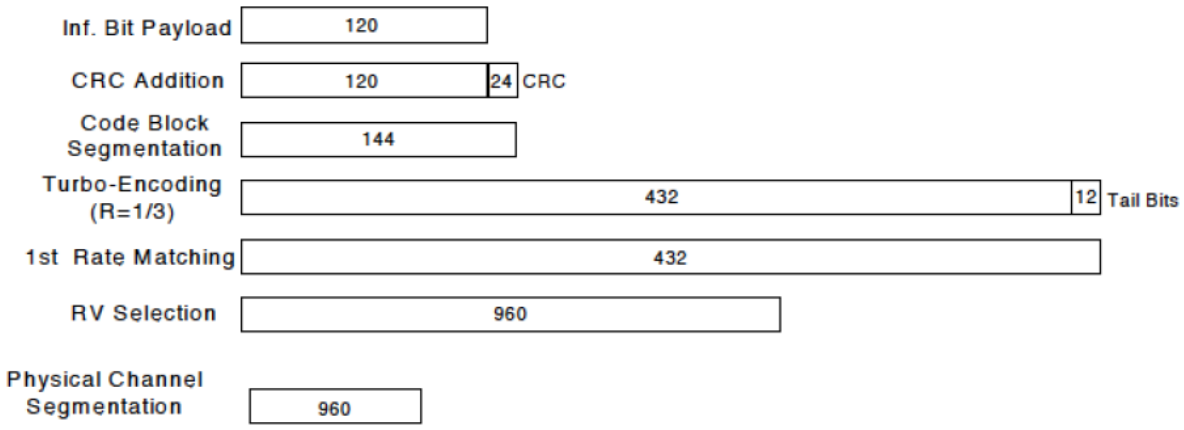


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Copyright © Huawei Technologies Co., Ltd

The following 4 Sub-tests for HSDPA were completed according to Release 5 procedures. A summary of subtest settings are illustrated below:

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (1)	CM(dB)(2)	MPR (dB)
1	2/15	15/15	64	2/15	4/15	0.0	0
2	12/15(3)	15/15(3)	64	12/15(3)	24/15	1.0	0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ ACK, Δ NACK and Δ CQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$

Note 2: CM=1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 3: 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 signalled gain factors for the reference TFC (TF1,TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$

Up commands are set continuously to set the UE to Max power.

Note:

1.The Dual Carriers transmission only applies to HSDPA physical channels

2.The Dual Carriers belong to the same Node and are on adjacent carriers.

3.The Dual Carriers do not support MIMO to serve UEs configured for dual cell operation

4.The Dual Carriers operate in the same frequency band .

5.The device doesn't support the modulation of 16QAM in uplink but 64QAM in downlink for DC-HSDPA mode.

6.The device doesn’t support carrier aggregation for it just can operate in Release 8.

6) HSPA+

Per KDB941225D01, SAR is required for Rel. 7 HSPA+ when SAR is required for Rel. 6 HSPA; otherwise, the 3G SAR test reduction procedure is applied to (uplink) HSPA+ with 12.2 kbps RMC as the primary mode. Power is measured for HSPA+ that supports uplink 16 QAM according to configurations in Table C.11.1.4 of 3GPP TS 34.121-1 to determine SAR test reduction.

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

Sub-test	β_c *(Note3)*	β_d	β_{HS} *(Note1)*	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	$\beta_{ed}1$: 30/15 $\beta_{ed}2$: 30/15	$\beta_{ed}3$: 24/15 $\beta_{ed}4$: 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_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 β_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.

Copyright © Huawei Technologies Co., Ltd

6.5 LTE Test Configuration

SAR for LTE band exposure configurations is measured according to the procedures of KDB 941225 D05. The CMW500 WideBand Radio Communication Tester was used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing.SAR test were performed with the same number of RB and RB offsets transmitting on all TTI frames(Maximum TTI)

1) Spectrum Plots for RB configurations

A properly configured base station simulator was used for LTE output power measurements and SAR testing.Therefore, spectrum plots for RB configurations were not required to be included in this report.

2) MPR

When MPR is implemented permanently within the UE, regardless of network requirements, only those RB configurations allowed by 3GPP for the channel bandwidth and modulation combinations may be tested with MPR active. Configurations with RB allocations less than the RB thresholds required by 3GPP must be tested without MPR.

The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

3) A-MPR

A-MPR(Additional MPR) has been disabled for all SAR tests by using Network Signalling Value of “NS_01”on the base station simulator.

4) LTE procedures for SAR testing

A) Largest channel bandwidth standalone SAR test requirements

i) QPSK with 1 RB allocation

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

Copyright © Huawei Technologies Co., Ltd

ii) QPSK with 50% RB allocation

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

iii) QPSK with 100% RB allocation

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

iv) Higher order modulations

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in above sections to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

B) Other channel bandwidth standalone SAR test requirements

For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section A) to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.

Copyright © Huawei Technologies Co., Ltd

6.6 WiFi Test Configuration

For WiFi SAR testing, a communication link is set up with the testing software for WiFi mode test. During the test,at the each test frequency channel, the EUT is operated at the RF continuous emission mode. The test procedures in KDB 248227D01 are applied.

6.6.1 Initial Test Position Procedure

For exposure condition with multiple test position, such as handsets operating next to the ear, devices with hotspot mode or UMPC mini-tablet , procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all position in an exposure condition. The test position with the highest extrapolated(peak) SAR is used as the initial test position. When reported SAR for the initial test position is ≤ 0.4W/kg, no additional testing for the remaining test position is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR position until the reported SAR result is ≤ 0.8W/kg or all test position are measured. For all positions/configurations tested using the initial test position and subsequent test positions, when the *reported* SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the *reported* SAR is ≤ 1.2 W/kg or all required channels are tested.

6.6.2 Initial Test Configuration Procedure

An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. SAR is measured using the highest measured maximum output power channel. For configurations with the same specified or measured maximum output power, additional transmission mode and test channel selection procedures are required (see section 5.3.2 of KDB 248227D01v02). SAR test reduction of subsequent highest output test channels is based on the *reported* SAR of the initial test configuration.

For next to the ear, hotspot mode and UMC mini-tablet exposure configurations where multiple test positions are required, the initial test position procedure is applied to minimize the number of test positions required for SAR measurement using the initial test configuration transmission mode. For fixed exposure conditions that do not have multiple SAR test positions, SAR is measured in the transmission mode determined by the initial test configuration.

When the *reported* SAR of the initial test configuration is > 0.8 W/kg, SAR measurement is required for the subsequent next highest measured output power channel(s) in the initial test configuration until the *reported* SAR is ≤ 1.2 W/kg or all required channels are tested.

6.6.3 Sub Test Configuration Procedure

SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units.

When the highest reported SAR for the initial test configuration, according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for that subsequent test configuration.

Copyright © Huawei Technologies Co., Ltd

6.6.4 WiFi 2.4G SAR Test Procedures

Separate SAR procedures are applied to DSSS and OFDM configurations in the 2.4 GHz band to simplify DSSS test requirements. For 802.11b DSSS SAR measurements, DSSS SAR procedure applies to fixed exposure test position and initial test position procedure applies to multiple exposure test positions.

A) 802.11b DSSS SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either a fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

1) When the *reported* SAR of the highest measured maximum output power channel (section 3.1 of of KDB 248227D01v02) for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

2) When the *reported* SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any *reported* SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

B) 2.4GHz 802.11g/n OFDM SAR Test Exclusion Requirements

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied (section 5.3 of of KDB 248227D01v02). SAR is not required for the following 2.4 GHz OFDM conditions.

1) When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.

2) When the highest *reported* SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Copyright © Huawei Technologies Co., Ltd

7 SAR Measurement Results

7.1 Conducted power measurements

For the measurements a Rohde & Schwarz Radio Communication Tester CMU 200&CMW500 was used. SAR drift measured at the same position in liquid before and after each SAR test as below 7.2 chapter.

Note: CMU200 measures GSM peak and average output power for active timeslots.For SAR the timebased average power is relevant. The difference in between depends on the duty cycle of the TDMA signal :

No. of timeslots	1	2	3	4
Duty Cycle	1:8.3	1:4.1	1:2.77	1:2.08
timebased avg. power compared to slotted avg. power	-9.19dB	-6.13dB	-4.42dB	-3.18dB

The signalling modes differ as follows:

mode	coding scheme	modulation
GPRS	CS1 to CS4	GMSK
EDGE	MCS1 to MCS4	GMSK
EDGE	MCS5 to MCS9	8PSK

Apart from modulation change (GMSK/8PSK) coding schemes differ in code rate without influence on the RF signal. Therefore one coding scheme per mode was selected for conducted power measurements.

Copyright © Huawei Technologies Co., Ltd

7.1.1 Conducted power measurements of GSM850

GSM850		Burst-Averaged output Power (dBm)				Division Factors	Frame-Averaged output Power (dBm)			
		Tune-up	128CH	190CH	251CH		Tune-up	128CH	190CH	251CH
GSM (CS)		33.5	31.60	31.80	31.90	-9.19	24.31	22.41	22.61	22.71
GPRS /EDGE (GMSK)	1 Tx Slot	33.5	31.65	31.84	31.96	-9.19	24.31	22.46	22.65	22.77
	2 Tx Slots	31.0	29.67	29.76	29.87	-6.13	24.87	23.54	23.63	23.74
	3 Tx Slots	29.5	27.96	27.65	27.66	-4.42	25.08	23.54	23.23	23.24
	4 Tx Slots	**28.5**	**26.62**	**26.88**	**26.85**	**-3.18**	**25.32**	**23.44**	**23.70**	**23.67**
EDGE (8PSK)	1 Tx Slot	27.5	26.34	26.40	26.47	-9.19	18.31	17.15	17.21	17.28
	2 Tx Slots	25.5	23.77	23.78	23.85	-6.13	19.37	17.64	17.65	17.72
	3 Tx Slots	24.0	22.25	22.26	22.31	-4.42	19.58	17.83	17.84	17.89
	4 Tx Slots	23.0	21.22	21.22	21.18	-3.18	19.82	18.04	18.04	18.00

Table 13: Conducted power measurement results of GSM850

Note:

1) The conducted power of GSM850 is measured with RMS detector.

2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timesolts.

3) Per KDB941225 D01, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

Copyright © Huawei Technologies Co., Ltd

7.1.2 Conducted power measurements of GSM1900

GSM1900		Burst-Averaged output Power (dBm)				Division Factors	Frame-Averaged output Power (dBm)			
		Tune-up	512CH	661CH	810CH		Tune-up	512CH	661CH	810CH
GSM (CS)		30.5	29.51	29.42	29.28	-9.19	21.31	20.32	20.23	20.09
GPRS/ EDGE (GMSK)	1 Tx Slot	30.5	29.45	29.41	29.30	-9.19	21.31	20.26	20.22	20.11
	2 Tx Slots	27.5	25.97	25.83	26.00	-6.13	21.37	19.84	19.70	19.87
	3 Tx Slots	25.5	24.36	24.26	24.20	-4.42	21.08	19.94	19.84	19.78
	4 Tx Slots	**24.6**	**22.84**	**22.78**	**22.70**	**-3.18**	**21.42**	**19.66**	**19.60**	**19.52**
EDGE (8PSK)	1 Tx Slot	26.0	24.77	24.80	24.75	-9.19	16.81	15.58	15.61	15.56
	2 Tx Slots	23.0	21.12	21.05	21.13	-6.13	16.87	14.99	14.92	15.00
	3 Tx Slots	21.0	19.48	19.37	19.46	-4.42	16.58	15.06	14.95	15.04
	4 Tx Slots	20.0	18.47	18.39	18.43	-3.18	16.82	15.29	15.21	15.25

Table 14: Conducted power measurement results of GSM1900 (Full power)

GSM1900		Burst-Averaged output Power (dBm)				Division Factors	Frame-Averaged output Power (dBm)			
		Tune-up	512CH	661CH	810CH		Tune-up	512CH	661CH	810CH
GSM (CS)		26.0	24.46	24.22	24.16	-9.19	16.81	15.27	15.03	14.97
GPRS/ EDGE (GMSK)	1 Tx Slot	26.0	24.46	24.25	24.21	-9.19	16.81	15.27	15.06	15.02
	2 Tx Slots	22.0	20.40	20.41	20.20	-6.13	15.87	14.27	14.28	14.07
	3 Tx Slots	21.0	20.29	20.26	20.07	-4.42	16.58	15.87	15.84	15.65
	4 Tx Slots	**21.0**	**20.07**	**20.14**	**19.90**	**-3.18**	**17.82**	**16.89**	**16.96**	**16.72**
EDGE (8PSK)	1 Tx Slot	24.0	22.67	22.60	22.62	-9.19	14.81	13.48	13.41	13.43
	2 Tx Slots	20.0	18.47	18.41	18.50	-6.13	13.87	12.34	12.28	12.37
	3 Tx Slots	20.0	18.36	18.34	18.32	-4.42	15.58	13.94	13.92	13.90
	4 Tx Slots	20.0	18.12	18.13	18.19	-3.18	16.82	14.94	14.95	15.01

Table 15: Conducted power measurement results of GSM1900 (Hotspot activated)

Note:

1) The conducted power of GSM1900 is measured with RMS detector.

2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timesolts.

3) Per KDB941225 D01, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

Copyright © Huawei Technologies Co., Ltd

7.1.3 Conducted power measurements of UMTS Band II

UMTS1900 (Band II)		Tune-up Max	Average Power (dBm)		
			9262CH	9400CH	9538CH
WCDMA	12.2kbps RMC	23.7	**22.14**	**22.27**	**22.03**
HSDPA	Subtest 1	22.0	20.87	20.77	20.70
	Subtest 2	22.0	21.02	20.79	20.85
	Subtest 3	21.0	20.13	19.95	20.01
	Subtest 4	21.0	20.06	20.32	19.99
HSUPA	Subtest 1	21.0	20.87	20.57	20.60
	Subtest 2	20.2	20.15	19.58	19.47
	Subtest 3	21.0	20.29	19.83	19.95
	Subtest 4	20.2	19.94	20.11	20.17
	Subtest 5	22.0	21.16	21.08	21.01
DC-HSDPA	Subtest 1	22.0	20.84	20.67	20.78
	Subtest 2	22.0	21.92	20.89	20.85
	Subtest 3	21.0	20.13	19.05	20.01
	Subtest 4	21.0	20.06	20.22	19.09
HSPA+(UL 16QAM)	Subtest 1	21.2	20.50	20.48	20.19

Table 16: Conducted power measurement results of UMTS Band II (Full power)

UMTS1900 (Band II)		Tune-up	Average Power (dBm)		
			9262CH	9400CH	9538CH
WCDMA	12.2kbps RMC	20.5	**19.96**	**19.87**	**19.86**
HSDPA	Subtest 1	19.5	18.52	18.43	18.38
	Subtest 2	19.5	18.58	18.50	18.44
	Subtest 3	18.5	17.73	17.63	17.90
	Subtest 4	18.5	18.07	17.57	17.90
HSUPA	Subtest 1	19.0	18.73	18.84	18.78
	Subtest 2	18.5	17.82	17.65	17.13
	Subtest 3	19.0	17.53	17.59	17.51
	Subtest 4	18.5	17.59	17.86	18.09
	Subtest 5	20.0	18.89	18.83	19.11
DC-HSDPA	Subtest 1	19.5	18.54	18.43	18.38
	Subtest 2	19.5	18.58	18.52	18.46
	Subtest 3	18.5	17.73	17.63	17.90
	Subtest 4	18.5	18.07	17.58	17.92
HSPA+(UL 16QAM)	Subtest 1	19.0	18.75	18.81	18.82

Table 17: Conducted power measurement results of UMTS Band II (Hotspot activated)

Note:

1) The conducted power of UMTS Band II is measured with RMS detector.

2) The bolded 12.2kbps RMC mode was selected for SAR testing(the primary mode).

3) Per KDB941225 D01, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up

Copyright © Huawei Technologies Co., Ltd

tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd

7.1.4 Conducted power measurements of UMTS Band IV

UMTS1700 (Band IV)		Tune-up Max	Average Power (dBm)		
			1312CH	1413CH	1513CH
WCDMA	12.2kbps RMC	23.5	**22.46**	**22.39**	**22.65**
HSDPA	Subtest 1	22.0	20.61	20.58	20.84
	Subtest 2	22.0	20.67	20.71	20.90
	Subtest 3	21.0	20.19	19.92	20.44
	Subtest 4	21.0	19.88	19.88	20.41
HSUPA	Subtest 1	21.5	20.97	20.56	20.71
	Subtest 2	21.0	19.58	19.62	19.72
	Subtest 3	21.5	19.97	20.03	20.42
	Subtest 4	21.0	20.34	20.29	20.33
	Subtest 5	22.0	21.29	21.25	21.45
DC-HSDPA	Subtest 1	22.0	20.67	20.66	20.84
	Subtest 2	22.0	20.63	20.74	20.73
	Subtest 3	21.0	20.17	19.92	20.24
	Subtest 4	21.0	19.98	19.96	20.31
HSPA+(UL16QAM)	Subtest 1	21.5	20.93	20.66	20.72

Table 18: Conducted power measurement results of UMTS Band IV (Full power)

UMTS1700 (Band IV)		Tune-up	Average Power (dBm)		
			1312CH	1413CH	1513CH
WCDMA	12.2kbps RMC	20.5	**19.72**	**19.45**	**19.63**
HSDPA	Subtest 1	19.0	17.91	17.93	18.05
	Subtest 2	19.0	17.94	17.96	18.11
	Subtest 3	18.0	17.56	17.38	17.69
	Subtest 4	18.0	17.04	17.38	17.54
HSUPA	Subtest 1	19.0	17.67	17.69	17.63
	Subtest 2	18.5	16.86	16.87	17.49
	Subtest 3	19.0	17.35	17.48	17.59
	Subtest 4	18.5	17.90	17.94	17.87
	Subtest 5	20.0	18.76	18.77	18.65
DC-HSDPA	Subtest 1	19.0	17.87	17.93	18.05
	Subtest 2	19.0	17.94	17.92	18.08
	Subtest 3	18.0	17.56	17.48	17.73
	Subtest 4	18.0	17.24	17.38	17.56
HSPA+(UL16QAM)	Subtest 1	19.0	17.77	17.68	17.73

Table 19: Conducted power measurement results of UMTS Band IV (Hotspot activated)

Note:

1) The conducted power of UMTS Band IV is measured with RMS detector.

2) The bolded 12.2kbps RMC mode was selected for SAR testing(the primary mode).

3) Per KDB941225 D01, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up

Copyright © Huawei Technologies Co., Ltd

tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd

7.1.5 Conducted power measurements of UMTS Band V

UMTS850 (Band V)		Tune-up Max	Average Power (dBm)		
			4132CH	4182CH	4233CH
WCDMA	12.2kbps RMC	24.0	**22.43**	**22.56**	**22.51**
HSDPA	Subtest 1	22.7	21.28	21.32	21.34
	Subtest 2	22.5	21.06	21.07	21.11
	Subtest 3	22.0	20.57	20.47	20.66
	Subtest 4	22.0	20.56	20.55	20.60
HSUPA	Subtest 1	22.5	20.51	20.59	20.55
	Subtest 2	21.0	19.20	19.79	19.15
	Subtest 3	21.5	19.69	19.56	19.76
	Subtest 4	22.1	20.13	20.15	20.12
	Subtest 5	22.5	20.85	20.82	20.80
DC-HSDPA	Subtest 1	22.5	20.67	20.65	20.69
	Subtest 2	22.5	20.68	20.58	20.77
	Subtest 3	21.5	19.77	19.84	19.84
	Subtest 4	21.5	19.79	19.78	19.80
HSPA+(UL16QAM)	Subtest 1	23	21.23	21.26	21.35

Table 20: Conducted power measurement results of UMTS Band V

Note:

1) The conducted power of UMTS Band V is measured with RMS detector.

2) The bolded 12.2kbps RMC mode was selected for SAR testing(the primary mode).

3) Per KDB941225 D01, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

Copyright © Huawei Technologies Co., Ltd

7.1.6 Conducted power measurements of LTE Band II

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 18607CH	Channel 18900CH	Channel 19193CH
1.4MHz	QPSK	1	0	22.5	22.00	21.58	21.75
		1	3	22.5	22.26	21.61	21.79
		1	5	22.5	22.08	21.57	21.74
		3	0	22.5	21.73	21.81	21.70
		3	2	22.5	21.77	21.85	21.83
		3	3	22.5	21.73	21.80	21.71
		6	0	22.0	20.77	20.77	20.75
	16QAM	1	0	22.0	20.57	20.40	20.70
		1	3	22.0	20.60	20.64	20.85
		1	5	22.0	20.50	20.41	20.83
		3	0	22.0	20.75	20.77	20.93
		3	2	22.0	20.59	20.81	21.06
		3	3	22.0	20.55	20.75	20.95
		6	0	21.0	19.57	19.67	19.96
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 18615CH	Channel 18900CH	Channel 19185CH
3MHz	QPSK	1	0	22.5	21.83	21.66	21.83
		1	7	22.5	22.02	21.69	21.93
		1	14	22.5	21.92	21.74	21.84
		8	0	22.0	20.75	20.74	20.89
		8	4	22.0	20.75	20.73	20.85
		8	7	22.0	20.69	20.72	20.91
		15	0	22.0	20.73	20.73	20.81
	16QAM	1	0	22.0	20.89	20.87	20.37
		1	7	22.0	21.19	21.16	20.45
		1	14	22.0	20.90	20.68	20.41
		8	0	21.0	19.94	19.67	19.27
		8	4	21.0	19.92	19.66	19.32
		8	7	21.0	19.89	19.85	19.29
		15	0	21.0	19.89	19.93	19.54

Copyright © Huawei Technologies Co., Ltd

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 18625CH	Channel 18900CH	Channel 19175CH
5MHz	QPSK	1	0	22.5	21.76	21.48	21.82
		1	13	22.5	21.80	21.48	21.91
		1	24	22.5	21.70	21.54	21.61
		12	0	22.0	20.77	20.74	20.69
		12	6	22.0	20.79	20.72	20.89
		12	13	22.0	20.68	20.68	20.80
		25	0	22.0	20.70	20.72	20.74
	16QAM	1	0	22.0	20.59	20.62	20.29
		1	13	22.0	20.35	20.59	20.23
		1	24	22.0	20.15	20.32	20.21
		12	0	21.0	19.78	19.53	19.65
		12	6	21.0	19.80	19.51	19.75
		12	13	21.0	19.90	19.56	19.56
		25	0	21.0	19.85	19.61	19.82
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 18650CH	Channel 18900CH	Channel 19150CH
10MHz	QPSK	1	0	22.5	21.75	21.74	21.73
		1	25	22.5	21.92	22.05	21.85
		1	49	22.5	21.80	21.63	21.68
		25	0	22.0	20.76	20.82	20.79
		25	13	22.0	20.70	20.82	20.80
		25	25	22.0	20.65	20.76	20.68
		50	0	22.0	20.61	20.80	20.69
	16QAM	1	0	22.0	20.48	20.49	20.82
		1	25	22.0	21.02	20.71	21.66
		1	49	22.0	20.82	20.20	20.77
		25	0	21.0	19.74	19.72	19.83
		25	13	21.0	19.68	19.81	19.84
		25	25	21.0	19.51	19.75	19.82
		50	0	21.0	19.57	19.77	19.67

Copyright © Huawei Technologies Co., Ltd

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 18675CH	Channel 18900CH	Channel 19125CH
15MHz	QPSK	1	0	22.5	22.25	21.56	21.61
		1	38	22.5	22.21	21.80	21.72
		1	74	22.5	21.91	21.60	21.65
		36	0	22.0	20.73	20.73	20.79
		36	18	22.0	20.69	20.80	20.85
		36	39	22.0	20.68	20.77	20.68
		75	0	22.0	20.68	20.80	20.74
	16QAM	1	0	22.0	20.50	20.70	20.84
		1	38	22.0	20.78	21.09	21.40
		1	74	22.0	20.20	21.43	21.41
		36	0	21.0	19.61	19.80	19.82
		36	18	21.0	19.76	19.83	19.77
		36	39	21.0	19.65	19.80	19.67
		75	0	21.0	19.66	19.75	19.79
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 18700CH	Channel 18900CH	Channel 19100CH
20MHz	QPSK	1	0	22.5	21.32	21.77	21.50
		1	50	22.5	21.74	21.93	**22.29**
		1	99	22.5	21.34	21.70	21.48
		50	0	22.0	20.67	**20.84**	20.83
		50	25	22.0	20.84	20.83	20.78
		50	50	22.0	20.78	20.68	20.74
		100	0	22.0	20.72	20.72	20.80
	16QAM	1	0	22.0	20.23	20.56	20.83
		1	50	22.0	20.46	20.47	20.64
		1	99	22.0	20.11	20.41	20.60
		50	0	21.0	19.80	19.74	19.59
		50	25	21.0	19.85	19.89	19.72
		50	50	21.0	19.80	19.55	19.66
		100	0	21.0	19.75	19.68	19.57

Table 21: Conducted power measurement results of LTE Band II (Full power)

Copyright © Huawei Technologies Co., Ltd

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 18607CH	Channel 18900CH	Channel 19193CH
1.4MHz	QPSK	1	0	20.0	19.07	19.14	19.26
		1	3	20.0	19.25	19.09	19.52
		1	5	20.0	19.18	19.05	19.48
		3	0	20.0	19.22	19.16	19.23
		3	2	20.0	19.37	19.24	19.29
		3	3	20.0	19.34	19.20	19.26
		6	0	20.0	19.22	19.19	19.25
	16QAM	1	0	20.0	19.26	19.51	19.15
		1	3	20.0	19.32	19.60	19.20
		1	5	20.0	19.17	18.93	19.29
		3	0	20.0	19.18	18.92	19.48
		3	2	20.0	19.11	19.10	19.65
		3	3	20.0	19.07	19.12	19.69
		6	0	20.0	19.36	18.96	19.19
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 18615CH	Channel 18900CH	Channel 19185CH
3MHz	QPSK	1	0	20.0	18.95	19.16	19.21
		1	7	20.0	19.34	19.20	19.32
		1	14	20.0	19.35	19.07	19.27
		8	0	20.0	19.32	19.16	19.15
		8	4	20.0	19.23	19.15	19.19
		8	7	20.0	19.17	19.15	19.27
		15	0	20.0	19.20	19.15	19.16
	16QAM	1	0	20.0	19.33	18.86	18.92
		1	7	20.0	19.55	18.88	19.01
		1	14	20.0	19.34	18.83	18.98
		8	0	20.0	19.32	18.94	19.05
		8	4	20.0	19.30	18.94	19.09
		8	7	20.0	19.26	19.05	19.06
		15	0	20.0	19.27	19.24	19.17

Copyright © Huawei Technologies Co., Ltd

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 18625CH	Channel 18900CH	Channel 19175CH
5MHz	QPSK	1	0	20.0	19.18	18.92	19.04
		1	13	20.0	19.16	18.80	19.20
		1	24	20.0	18.96	18.95	19.13
		12	0	20.0	19.18	19.20	19.16
		12	6	20.0	19.19	19.17	19.27
		12	13	20.0	19.16	19.13	19.27
		25	0	20.0	19.18	19.17	19.21
	16QAM	1	0	20.0	18.62	18.80	18.77
		1	13	20.0	18.80	19.16	18.95
		1	24	20.0	18.72	19.23	18.88
		12	0	20.0	19.09	19.09	19.10
		12	6	20.0	19.01	19.07	19.27
		12	13	20.0	19.17	19.03	19.30
		25	0	20.0	19.32	19.10	19.27
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 18650CH	Channel 18900CH	Channel 19150CH
10MHz	QPSK	1	0	20.0	19.26	19.15	19.29
		1	25	20.0	19.39	19.39	19.60
		1	49	20.0	19.31	19.02	19.28
		25	0	20.0	19.20	19.15	19.30
		25	13	20.0	19.15	19.21	19.22
		25	25	20.0	19.08	19.23	19.22
		50	0	20.0	19.04	19.27	19.14
	16QAM	1	0	20.0	19.01	18.98	19.04
		1	25	20.0	19.37	19.17	19.27
		1	49	20.0	19.26	18.54	18.94
		25	0	20.0	19.03	19.24	19.33
		25	13	20.0	19.00	19.34	19.44
		25	25	20.0	18.93	19.36	19.31
		50	0	20.0	18.96	19.19	19.16

Copyright © Huawei Technologies Co., Ltd

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 18675CH	Channel 18900CH	Channel 19125CH
15MHz	QPSK	1	0	20.0	19.40	19.00	19.14
		1	38	20.0	19.02	19.33	19.18
		1	74	20.0	19.38	19.00	19.12
		36	0	20.0	19.09	19.15	19.25
		36	18	20.0	19.15	19.21	19.21
		36	39	20.0	19.14	19.18	19.15
		75	0	20.0	19.12	19.22	19.28
	16QAM	1	0	20.0	19.16	19.57	19.26
		1	38	20.0	19.22	19.54	19.79
		1	74	20.0	18.64	19.53	19.35
		36	0	20.0	19.00	19.32	19.24
		36	18	20.0	19.08	19.27	19.31
		36	39	20.0	19.08	19.23	19.21
		75	0	20.0	19.05	19.27	19.31
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 18700CH	Channel 18900CH	Channel 19100CH
20MHz	QPSK	1	0	20.0	18.86	19.18	18.97
		1	50	20.0	19.21	**19.44**	19.36
		1	99	20.0	18.79	19.31	18.94
		50	0	20.0	19.12	19.29	19.30
		50	25	20.0	19.21	**19.36**	19.28
		50	50	20.0	19.17	19.19	19.17
		100	0	20.0	19.17	19.23	19.16
	16QAM	1	0	20.0	19.09	19.03	19.03
		1	50	20.0	19.48	19.17	19.20
		1	99	20.0	18.67	18.88	19.04
		50	0	20.0	19.11	19.28	19.18
		50	25	20.0	19.19	19.37	19.21
		50	50	20.0	19.14	19.13	19.12
		100	0	20.0	19.15	19.17	19.14

Table 22: Conducted power measurement results of LTE Band II (Hotspot activated)

Copyright © Huawei Technologies Co., Ltd

7.1.7 Conducted power measurements of LTE Band IV

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 19957CH	Channel 20175CH	Channel 20393CH
1.4MHz	QPSK	1	0	22.5	21.44	21.47	21.47
		1	3	22.5	21.45	21.46	21.49
		1	5	22.5	21.37	21.42	21.48
		3	0	22.5	21.49	21.44	21.41
		3	2	22.5	21.38	21.51	21.43
		3	3	22.5	21.48	21.45	21.38
		6	0	22.0	20.43	20.53	20.45
	16QAM	1	0	22.0	20.44	20.37	20.47
		1	3	22.0	20.47	20.53	20.52
		1	5	22.0	20.40	20.40	20.50
		3	0	22.0	20.46	20.67	20.81
		3	2	22.0	20.28	20.83	20.82
		3	3	22.0	20.13	20.78	20.74
		6	0	21.0	19.42	19.60	19.71
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 19965CH	Channel 20175CH	Channel 20385CH
3MHz	QPSK	1	0	22.5	21.23	21.39	21.51
		1	7	22.5	21.52	21.47	21.35
		1	14	22.5	21.54	21.63	21.54
		8	0	22.0	20.54	20.62	20.61
		8	4	22.0	20.54	20.58	20.57
		8	7	22.0	20.50	20.58	20.57
		15	0	22.0	20.53	20.65	20.55
	16QAM	1	0	22.0	20.33	20.48	20.17
		1	7	22.0	20.35	20.44	20.31
		1	14	22.0	20.24	20.40	20.14
		8	0	21.0	19.21	19.62	19.20
		8	4	21.0	19.20	19.59	19.16
		8	7	21.0	19.41	19.70	19.18
		15	0	21.0	19.45	19.51	19.25

Copyright © Huawei Technologies Co., Ltd

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 19975CH	Channel 20175CH	Channel 20375CH
5MHz	QPSK	1	0	22.5	21.43	21.32	21.56
		1	13	22.5	21.48	21.47	21.42
		1	24	22.5	21.46	21.36	21.39
		12	0	22.0	20.58	20.54	20.61
		12	6	22.0	20.60	20.68	20.69
		12	13	22.0	20.48	20.57	20.62
		25	0	22.0	20.50	20.60	20.72
	16QAM	1	0	22.0	20.05	20.08	20.34
		1	13	22.0	20.02	20.20	20.23
		1	24	22.0	19.99	20.22	20.37
		12	0	21.0	19.57	19.53	19.54
		12	6	21.0	19.58	19.66	19.61
		12	13	21.0	19.55	19.48	19.56
		25	0	21.0	19.69	19.53	19.66
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20000CH	Channel 20175CH	Channel 20350CH
10MHz	QPSK	1	0	22.5	21.5	21.4	21.7
		1	25	22.5	21.9	21.8	22.1
		1	49	22.5	21.6	21.4	21.6
		25	0	22.0	20.6	20.6	20.8
		25	13	22.0	20.6	20.7	20.8
		25	25	22.0	20.6	20.6	20.6
		50	0	22.0	20.6	20.6	20.8
	16QAM	1	0	22.0	20.4	21.0	20.5
		1	25	22.0	20.8	20.9	20.9
		1	49	22.0	20.3	20.9	20.3
		25	0	21.0	19.6	19.7	19.7
		25	13	21.0	19.5	19.8	19.9
		25	25	21.0	19.3	19.7	19.7
		50	0	21.0	19.5	19.5	19.7

Copyright © Huawei Technologies Co., Ltd

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20025CH	Channel 20175CH	Channel 20325CH
15MHz	QPSK	1	0	22.5	21.70	21.27	21.43
		1	38	22.5	22.00	21.71	21.66
		1	74	22.5	21.80	21.30	21.48
		36	0	22.0	20.64	20.71	20.80
		36	18	22.0	20.61	20.68	20.77
		36	39	22.0	20.58	20.60	20.73
		75	0	22.0	20.56	20.57	20.72
	16QAM	1	0	22.0	20.66	20.33	21.46
		1	38	22.0	20.95	20.80	21.66
		1	74	22.0	20.58	20.88	21.40
		36	0	21.0	19.56	19.65	19.65
		36	18	21.0	19.60	19.59	19.74
		36	39	21.0	19.47	19.51	19.68
		75	0	21.0	19.55	19.57	19.66
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20050CH	Channel 20175CH	Channel 20300CH
20MHz	QPSK	1	0	22.5	21.04	21.56	**21.50**
		1	50	22.5	21.34	21.82	**21.96**
		1	99	22.5	21.22	21.72	21.38
		50	0	22.0	20.63	20.63	**20.89**
		50	25	22.0	20.62	20.66	20.80
		50	50	22.0	20.62	20.55	20.72
		100	0	22.0	20.63	20.61	20.89
	16QAM	1	0	22.0	20.02	20.15	20.85
		1	50	22.0	20.33	20.76	20.78
		1	99	22.0	20.15	20.41	20.58
		50	0	21.0	19.66	19.62	19.72
		50	25	21.0	19.68	19.74	19.83
		50	50	21.0	19.73	19.62	19.65
		100	0	21.0	19.65	19.57	19.78

Table 23: Conducted power measurement results of LTE Band IV(Full power)

Copyright © Huawei Technologies Co., Ltd

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 19957CH	Channel 20175CH	Channel 20393CH
1.4MHz	QPSK	1	0	20.0	19.28	19.16	19.05
		1	3	20.0	19.08	19.35	19.13
		1	5	20.0	19.00	19.10	19.05
		3	0	20.0	19.07	19.15	19.01
		3	2	20.0	19.01	19.30	19.02
		3	3	20.0	18.97	19.27	19.06
		6	0	20.0	19.07	19.25	19.07
	16QAM	1	0	20.0	18.96	19.43	18.84
		1	3	20.0	19.00	19.59	18.84
		1	5	20.0	18.93	19.48	18.79
		3	0	20.0	19.07	19.18	19.16
		3	2	20.0	19.10	19.17	19.17
		3	3	20.0	19.06	19.12	19.10
		6	0	20.0	19.27	18.98	19.05
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 19965CH	Channel 20175CH	Channel 20385CH
3MHz	QPSK	1	0	20.0	19.16	19.05	19.06
		1	7	20.0	19.36	19.33	19.00
		1	14	20.0	19.21	19.22	18.93
		8	0	20.0	19.17	19.21	19.03
		8	4	20.0	19.17	19.19	18.99
		8	7	20.0	19.12	19.20	19.10
		15	0	20.0	19.16	19.15	19.08
	16QAM	1	0	20.0	18.83	19.26	18.86
		1	7	20.0	19.13	19.35	18.79
		1	14	20.0	18.94	19.31	18.73
		8	0	20.0	19.02	19.13	18.71
		8	4	20.0	19.00	19.03	18.68
		8	7	20.0	18.96	19.21	18.69
		15	0	20.0	19.18	19.02	18.87

Copyright © Huawei Technologies Co., Ltd

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 19975CH	Channel 20175CH	Channel 20375CH
5MHz	QPSK	1	0	20.0	19.03	18.94	19.10
		1	13	20.0	18.97	18.94	19.07
		1	24	20.0	19.05	18.87	18.99
		12	0	20.0	19.13	19.04	19.12
		12	6	20.0	19.14	19.17	19.20
		12	13	20.0	19.01	19.08	19.14
		25	0	20.0	19.03	19.13	19.22
	16QAM	1	0	20.0	18.55	19.16	18.93
		1	13	20.0	18.56	19.26	18.92
		1	24	20.0	18.59	19.18	18.83
		12	0	20.0	19.07	19.15	19.17
		12	6	20.0	19.08	19.29	19.13
		12	13	20.0	19.04	19.20	19.00
		25	0	20.0	19.00	19.05	19.08
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20000CH	Channel 20175CH	Channel 20350CH
10MHz	QPSK	1	0	20.0	19.21	18.95	19.10
		1	25	20.0	19.44	19.51	19.52
		1	49	20.0	19.23	19.07	19.10
		25	0	20.0	19.16	19.22	19.21
		25	13	20.0	19.21	19.08	19.28
		25	25	20.0	19.09	19.08	18.97
		50	0	20.0	19.11	19.11	19.17
	16QAM	1	0	20.0	19.04	19.41	19.02
		1	25	20.0	19.53	19.41	19.53
		1	49	20.0	19.00	19.45	18.78
		25	0	20.0	19.00	19.21	19.35
		25	13	20.0	19.12	18.97	19.49
		25	25	20.0	18.86	18.89	19.32
		50	0	20.0	18.96	18.90	19.19

Copyright © Huawei Technologies Co., Ltd

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20025CH	Channel 20175CH	Channel 20325CH
15MHz	QPSK	1	0	20.0	19.31	18.82	19.11
		1	38	20.0	19.64	19.05	19.15
		1	74	20.0	19.34	18.95	18.88
		36	0	20.0	19.09	19.08	19.20
		36	18	20.0	19.01	19.15	19.26
		36	39	20.0	19.00	18.99	19.13
		75	0	20.0	19.08	18.94	19.15
	16QAM	1	0	20.0	19.12	18.59	19.09
		1	38	20.0	19.46	18.83	19.70
		1	74	20.0	19.07	18.64	18.97
		36	0	20.0	19.03	19.14	18.95
		36	18	20.0	19.01	19.30	19.25
		36	39	20.0	18.76	19.01	18.98
		75	0	20.0	18.86	18.87	19.06
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20050CH	Channel 20175CH	Channel 20300CH
20MHz	QPSK	1	0	20.0	18.68	19.03	18.99
		1	50	20.0	19.15	19.36	**19.48**
		1	99	20.0	18.91	19.33	18.90
		50	0	20.0	19.11	19.21	**19.39**
		50	25	20.0	19.18	19.23	19.28
		50	50	20.0	19.16	19.13	19.24
		100	0	20.0	19.08	19.07	19.30
	16QAM	1	0	20.0	18.52	18.46	19.02
		1	50	20.0	18.69	19.10	19.49
		1	99	20.0	18.47	18.66	18.93
		50	0	20.0	18.99	19.08	19.18
		50	25	20.0	19.12	19.18	19.18
		50	50	20.0	19.09	19.06	19.01
		100	0	20.0	19.10	19.02	19.14

Table 24: Conducted power measurement results of LTE Band IV (Hotspot activated)

Copyright © Huawei Technologies Co., Ltd

7.1.8 Conducted power measurements of LTE Band V

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20407CH	Channel 20525CH	Channel 20643CH
1.4MHz	QPSK	1	0	22.5	21.53	21.17	21.24
		1	3	22.5	21.69	21.57	21.67
		1	5	22.5	21.58	21.26	21.22
		3	0	22.5	21.37	21.50	21.33
		3	2	22.5	21.47	21.36	21.38
		3	3	22.5	21.49	21.37	21.35
		6	0	22.0	20.52	20.38	20.36
	16QAM	1	0	22.0	20.47	20.71	20.46
		1	3	22.0	20.67	20.39	20.52
		1	5	22.0	20.64	20.76	20.36
		3	0	22.0	20.63	20.59	20.60
		3	2	22.0	20.57	20.66	20.48
		3	3	22.0	20.56	20.69	20.60
		6	0	21.0	19.50	19.42	19.33
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20415CH	Channel 20525CH	Channel 20635CH
3MHz	QPSK	1	0	22.5	21.53	21.17	21.24
		1	7	22.5	21.69	21.57	21.67
		1	14	22.5	21.58	21.26	21.22
		8	0	22.0	20.37	20.50	20.33
		8	4	22.0	20.47	20.36	20.38
		8	7	22.0	20.49	20.37	20.35
		15	0	22.0	20.52	20.38	20.36
	16QAM	1	0	22.0	20.47	20.71	20.46
		1	7	22.0	20.67	20.39	20.52
		1	14	22.0	20.64	20.76	20.36
		8	0	21.0	19.43	19.44	19.44
		8	4	21.0	19.52	19.54	19.41
		8	7	21.0	19.44	19.56	19.48
		15	0	21.0	19.50	19.42	19.33

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20425CH	Channel 20525CH	Channel 20625CH
5MHz	QPSK	1	0	22.5	21.53	21.17	21.24
		1	13	22.5	21.69	21.57	21.67
		1	24	22.5	21.58	21.26	21.22
		12	0	22.0	20.37	20.50	20.33
		12	6	22.0	20.47	20.36	20.38
		12	13	22.0	20.49	20.37	20.35
		25	0	22.0	20.52	20.38	20.36
	16QAM	1	0	22.0	20.47	20.71	20.46
		1	13	22.0	20.67	20.39	20.52
		1	24	22.0	20.64	20.76	20.36
		12	0	21.0	19.43	19.44	19.44
		12	6	21.0	19.52	19.54	19.41
		12	13	21.0	19.44	19.55	19.48
		25	0	21.0	19.50	19.42	19.33
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20450CH	Channel 20525CH	Channel 20600CH
10MHz	QPSK	1	0	22.5	21.53	21.17	21.24
		1	25	22.5	21.69	21.57	**21.67**
		1	49	22.5	21.58	21.26	21.22
		25	0	22.0	20.37	20.50	20.33
		25	13	22.0	20.47	20.36	20.38
		25	25	22.0	20.49	20.37	20.35
		50	0	22.0	20.52	20.38	20.36
	16QAM	1	0	22.0	20.47	20.71	20.46
		1	25	22.0	20.67	20.39	20.52
		1	49	22.0	20.64	20.76	20.36
		25	0	21.0	19.43	19.44	19.44
		25	13	21.0	19.52	19.54	19.41
		25	25	21.0	19.44	19.56	19.48
		50	0	21.0	19.50	19.42	19.33

Table 25: Conducted power measurement results of LTE Band V

Copyright © Huawei Technologies Co., Ltd

7.1.9 Conducted power measurements of LTE Band VII

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20775CH	Channel 21100CH	Channel 21425CH
5MHz	QPSK	1	0	22.5	20.59	21.61	21.57
		1	13	22.5	21.54	21.63	21.59
		1	24	22.5	21.51	21.42	21.65
		12	0	22.0	20.34	20.56	20.77
		12	6	22.0	20.42	20.56	20.71
		12	13	22.0	20.33	20.53	20.66
		25	0	22.0	20.37	20.46	20.73
	16QAM	1	0	22.0	20.40	20.40	20.90
		1	13	22.0	20.37	20.41	21.11
		1	24	22.0	20.35	20.43	20.98
		12	0	21.0	19.64	19.53	19.82
		12	6	21.0	19.65	19.69	19.73
		12	13	21.0	19.56	19.49	19.69
		25	0	21.0	19.50	19.57	19.91
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20800CH	Channel 21100CH	Channel 21400CH
10MHz	QPSK	1	0	22.5	21.46	21.25	21.55
		1	25	22.5	21.66	21.82	21.81
		1	49	22.5	21.63	21.44	21.65
		25	0	22.0	20.54	20.57	20.73
		25	13	22.0	20.62	20.47	20.88
		25	25	22.0	20.49	20.48	20.75
		50	0	22.0	20.57	20.55	20.78
	16QAM	1	0	22.0	20.89	20.55	21.05
		1	25	22.0	21.23	20.48	21.33
		1	49	22.0	20.50	20.38	21.14
		25	0	21.0	19.64	19.63	19.75
		25	13	21.0	19.74	19.78	20.00
		25	25	21.0	19.59	19.67	19.86
		50	0	21.0	19.76	19.65	19.86

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20825CH	Channel 21100CH	Channel 21375CH
15MHz	QPSK	1	0	22.5	21.52	21.16	21.37
		1	38	22.5	21.83	21.47	21.50
		1	74	22.5	21.52	21.20	21.48
		36	0	22.0	20.59	20.56	20.78
		36	18	22.0	20.57	20.56	20.85
		36	39	22.0	20.51	20.53	20.74
		75	0	22.0	20.46	20.50	20.77
	16QAM	1	0	22.0	20.91	20.69	21.71
		1	38	22.0	20.82	20.66	21.61
		1	74	22.0	20.51	20.31	21.67
		36	0	21.0	19.57	19.38	19.82
		36	18	21.0	19.56	19.41	19.90
		36	39	21.0	19.49	19.49	19.78
		75	0	21.0	19.66	19.57	19.77
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20850CH	Channel 21100CH	Channel 21350CH
20MHz	QPSK	1	0	22.5	21.25	21.20	21.53
		1	50	22.5	21.50	21.76	22.13
		1	99	22.5	21.28	21.33	**22.00**
		50	0	22.0	20.47	20.51	20.64
		50	25	22.0	20.51	20.54	20.76
		50	50	22.0	20.46	20.54	20.74
		100	0	22.0	20.49	20.45	20.76
	16QAM	1	0	22.0	20.85	21.42	20.69
		1	50	22.0	20.97	21.44	20.93
		1	99	22.0	20.86	21.35	20.76
		50	0	21.0	19.38	19.47	19.63
		50	25	21.0	19.42	19.51	19.87
		50	50	21.0	19.59	19.51	19.87
		100	0	21.0	19.59	19.55	19.82

Table 26: Conducted power measurement results of LTE Band VII

Copyright © Huawei Technologies Co., Ltd

7.1.10 Conducted power measurements of WiFi 2.4G

The output power of WiFi antenna is as following:

Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11b	1	2412	1	17.5	**16.13**	Yes
	6	2437		17.5	15.56	Yes
	11	2462		17.5	**16.23**	Yes
802.11g	1	2412	6	15.0	13.31	No
	6	2437		15.0	12.68	No
	11	2462		15.0	13.67	No
802.11n-20M	1	2412	MCS0	14.0	12.45	No
	6	2437		14.0	11.80	No
	11	2462		14.0	12.80	No

Table 27: Conducted power measurement results of WiFi 2.4G

Note: 1) The Average conducted power of WiFi is measured with RMS detector.

7.1.11 Conducted power measurements of BT

The output power of BT antenna is as following:

BT 2450	Tune-up	Average Conducted Power (dBm)		
		0CH	39CH	78CH
DH5	9.0	7.30	7.43	6.25
2DH5	9.0	8.19	8.28	7.04
3DH5	9.0	8.37	8.48	7.21

BT 2450	Tune-up	Average Conducted Power (dBm)		
		0CH	19CH	39CH
BT BLE	3.0	0.62	0.91	-0.51

Table 28: Conducted power measurement results of BT.

Note:

1) The conducted power of BT is measured with RMS detector.

2) The bolded mode was selected for SAR testing.

Copyright © Huawei Technologies Co., Ltd

7.2 SAR measurement Results

General Notes:

1) Per KDB447498 D01, all SAR measurement results are scaled to the maximum tune-up tolerance limit to demonstrate SAR compliance.

2) Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:

● ≤ 0.8W/kg for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is ≤ 100MHz.

● ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.

● ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz.

When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel must be used.

3) Per KDB865664 D01,for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg; if the deviation among the repeated measurement is ≤20%, and the measured SAR <1.45W/Kg, only one repeated measurement is required.

4) Per KDB941225 D06, the DUT Dimension is bigger than 9 cm x 5 cm, so 10mm is chosen as the test separation distance for Hotspot mode. When the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.

5) Per KDB648474 D04, SAR is evaluated without a headset connected to the device. When the standalone reported body-worn SAR is ≤1.2 W/kg, no additional SAR evaluations using a headset are required.

6) Per KDB865664 D02, SAR plot is only required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination; Plots are also required when the measured SAR is > 1.5 W/kg, or > 7.0 W/kg for occupational exposure. The published RF exposure KDB procedures may require additional plots; for example, to support SAR to peak location separation ratio test exclusion and/or volume scan post-processing(Refer to appendix B for details).

7) Per KDB 648474D04, for handsets with additional batteries, the highest reported SAR for each wireless technology, frequency band, operating mode and applicable exposure condition (head, body-worn accessory, hotspot mode, etc.) must be repeated with the specific accessory attached. In addition, for test cases where the measured SAR for a handset is greater than 1.2 W/kg, these tests should also be repeated with the additional batteries.

Copyright © Huawei Technologies Co., Ltd

GSM Notes:

1) Per KDB941225 D01, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

2) Per KDB648474 D04, the device does not support DTM function. Body-worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.

UMTS Notes:

1) Per KDB941225 D01, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

LTE Notes:

1) The LTE test configurations are determined according to KDB941225 D05 SAR for LTE Devices.The general test procedures used for SAR testing can be found in Section 6.5.

2) A-MPR was disabled for all SAR test by setting NS_01 on the base station simulator.SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames(maximum TTI)

WiFi Notes:

Per KDB248227D01:

1) When reported SAR for the initial test position is ≤ 0.4W/kg, no additional testing for the remaining test position is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR position until the reported SAR result is ≤ 0.8W/kg or all test position are measured. For all positions/configurations tested using the initial test position and subsequent test positions, when the *reported* SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the *reported* SAR is ≤ 1.2 W/kg or all required channels are tested..

2) The highest SAR measured for the initial test position or initial test configuration should be used to determine SAR test exclusion according to the sum of 1-g SAR and SAR peak to location ratio provisions in KDB 447498. In addition, a test lab may also choose to perform standalone SAR measurements for test positions and 802.11 configurations that are not required by the initial test position or initial test configuration procedures and apply the results to determine simultaneous transmission SAR test exclusion, according to sum of 1-g and SAR peak to location ratio requirements to reduce the number of simultaneous transmission SAR measurements.

Copyright © Huawei Technologies Co., Ltd

7.2.1 SAR measurement Result of GSM850

Test Position of Head	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)											
Left touch	/	190/836.6	GSM	0.178	0.124	0.06	31.50	33.50	0.282	Battery 1#	/
Left tilt	/	190/836.6	GSM	0.116	0.081	0.06	31.50	33.50	0.184	Battery 1#	/
Right touch	/	190/836.6	GSM	0.180	0.124	0.05	31.50	33.50	0.285	Battery 1#	/
Right tilt	/	190/836.6	GSM	0.107	0.075	0.20	31.50	33.50	0.170	Battery 1#	/
Right touch	/	251/848.8	GSM	0.264	0.203	0.08	31.55	33.50	0.414	Battery 1#	/
Right touch	/	128/824.2	GSM	0.178	0.123	0.04	31.38	33.50	0.290	Battery 1#	/
SLA-L03(New) Test at the worst case from original report											
Right touch	/	251/848.8	GSM	**0.289**	0.218	0.12	31.90	33.50	**0.418**	Battery 1#	Yes

Table 29: Head SAR test results of GSM850

Test Position of Body-Worn	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)											
Front Side	10mm	190/836.6	GPRS 4TS	0.374	0.264	-0.07	27.13	28.50	0.513	Battery 1#	/
Back Side	10mm	190/836.6	GPRS 4TS	0.443	0.313	-0.05	27.13	28.50	0.607	Battery 1#	/
Back Side	10mm	251/848.8	GPRS 4TS	**0.541**	0.414	-0.04	27.44	28.50	**0.691**	Battery 1#	/
Back Side	10mm	128/824.2	GPRS 4TS	0.420	0.297	0.04	27.03	28.50	0.589	Battery 1#	/
SLA-L03(New) Test at the worst case from original report											
Back Side	10mm	251/848.8	GPRS 4TS	0.412	0.323	0.10	26.85	28.50	0.602	Battery 1#	Yes

Table 30:Body-worn SAR test results of GSM850

Copyright © Huawei Technologies Co., Ltd

Test Position of Hotspot	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)											
Front Side	10mm	190/836.6	GPRS 4TS	0.374	0.264	-0.07	27.13	28.50	0.513	Battery 1#	/
Back Side	10mm	190/836.6	GPRS 4TS	0.443	0.313	-0.05	27.13	28.50	0.607	Battery 1#	/
Left Side	10mm	190/836.6	GPRS 4TS	0.350	0.320	-0.03	27.13	28.50	0.480	Battery 1#	/
Right Side	10mm	190/836.6	GPRS 4TS	0.384	0.360	-0.03	27.13	28.50	0.530	Battery 1#	/
Bottom Side	10mm	190/836.6	GPRS 4TS	0.024	0.020	0.03	27.13	28.50	0.030	Battery 1#	/
Back Side	10mm	251/848.8	GPRS 4TS	**0.541**	0.414	-0.04	27.44	28.50	**0.691**	Battery 1#	/
Back Side	10mm	128/824.2	GPRS 4TS	0.420	0.297	0.04	27.03	28.50	0.589	Battery 1#	/
SLA-L03(New) Test at the worst case from original report											
Back Side	10mm	251/848.8	GPRS 4TS	0.412	0.323	0.10	26.85	28.50	0.602	Battery 1#	Yes

Table 31:Hospot SAR test results of GSM850

Copyright © Huawei Technologies Co., Ltd

7.2.2 SAR measurement Result of GSM1900

Test Position of Head	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)											
Left touch	0mm	661/1880	GSM	0.139	0.082	0.10	29.70	30.50	0.167	Battery 1#	/
Left tilt	0mm	661/1880	GSM	0.103	0.058	0.07	29.70	30.50	0.124	Battery 1#	/
Right touch	0mm	661/1880	GSM	0.115	0.068	0.08	29.70	30.50	0.138	Battery 1#	/
Right tilt	0mm	661/1880	GSM	0.082	0.047	0.03	29.70	30.50	0.099	Battery 1#	/
Left touch	0mm	810/1909.8	GSM	**0.158**	0.099	0.07	29.96	30.50	**0.179**	Battery 1#	/
Left touch	0mm	512/1850.2	GSM	0.130	0.076	0.01	29.71	30.50	0.156	Battery 1#	/
SLA-L03(New) Test at the worst case from original report											
Left touch	0mm	810/1909.8	GSM	0.080	0.051	0.12	29.28	30.50	**0.105**	Battery 1#	Yes

Table 32: Head SAR test results of GSM1900

Test Position of Body-Worn	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
SLA-L03(New) SAR test data											
Front Side	15mm	661/1880	GPRS 4TS	0.066	0.039	-0.11	22.78	24.60	0.101	Battery 1#	/
Back Side	15mm	661/1880	GPRS 4TS	0.125	0.698	0.08	22.78	24.60	0.190	Battery 1#	/
Back Side	15mm	661/1880	GPRS 4TS	**0.231**	0.133	-0.01	22.78	24.60	**0.351**	Battery 2#	Yes

Table 33: Body-Worn SAR test results of GSM1900

Test Position of Hotspot	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
SLA-L03(New) SAR test data											
Front Side	10mm	661/1880	GPRS 4TS	0.132	0.078	-0.12	20.14	21.00	0.161	Battery 1#	/
Back Side	10mm	661/1880	GPRS 4TS	0.276	0.143	-0.16	20.14	21.00	0.336	Battery 1#	/
Left Side	10mm	661/1880	GPRS 4TS	0.017	0.010	0.19	20.14	21.00	0.021	Battery 1#	/
Right Side	10mm	661/1880	GPRS 4TS	0.031	0.018	-0.15	20.14	21.00	0.038	Battery 1#	/
Bottom Side	10mm	661/1880	GPRS 4TS	0.308	0.167	0.14	20.14	21.00	0.375	Battery 1#	/
Bottom Side	10mm	512/1850.2	GPRS 4TS	**0.488**	0.265	0.14	20.07	21.00	**0.605**	Battery 1#	Yes
Bottom Side	10mm	810/1909.8	GPRS 4TS	0.313	0.167	0.13	19.90	21.00	0.403	Battery 1#	/
Bottom Side	10mm	512/1850.2	GPRS 4TS	0.376	0.204	0.09	20.07	21.00	0.466	Battery 2#	/

Table 34: Hotspot SAR test results of GSM1900

Copyright © Huawei Technologies Co., Ltd

7.2.3 SAR measurement Result of UMTS Band II

Test Position of Head	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)											
Left touch	/	9400/1880	RMC	0.360	0.206	-0.17	22.00	23.70	0.532	Battery 1#	/
Left tilt	/	9400/1880	RMC	0.286	0.144	-0.07	22.00	23.70	0.423	Battery 1#	/
Right touch	/	9400/1880	RMC	0.249	0.138	0.14	22.00	23.70	0.368	Battery 1#	/
Right tilt	/	9400/1880	RMC	0.167	0.085	0.10	22.00	23.70	0.247	Battery 1#	/
Left touch	/	9538/1907.6	RMC	**0.382**	0.234	0.05	22.10	23.70	**0.552**	Battery 1#	/
Left touch	/	9262/1852.4	RMC	0.310	0.177	0.03	22.10	23.70	0.448	Battery 1#	/
SLA-L03(New) Test at the worst case from original report											
Left touch	/	9538/1907.6	RMC	0.137	0.088	0.10	22.03	23.70	**0.201**	Battery 1#	Yes

Table 35: Head SAR test results of UMTS Band II

Test Position of Body-Worn	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
SLA-L03(New) SAR test data											
Front Side	15mm	9400/1880	RMC	0.251	0.149	-0.13	22.27	23.70	0.349	Battery 1#	/
Back Side	15mm	9400/1880	RMC	0.389	0.222	-0.18	22.27	23.70	0.541	Battery 1#	/
Back Side	15mm	9400/1880	RMC	**0.398**	0.227	-0.09	22.27	23.70	**0.553**	Battery 2#	Yes

Table 36: Body-Worn SAR test results of UMTS Band II

Test Position of Hotspot	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
SLA-L03(New) SAR test data											
Front Side	10mm	9400/1880	RMC	0.246	0.137	0.00	19.87	20.50	0.284	Battery 1#	/
Back Side	10mm	9400/1880	RMC	0.453	0.236	0.11	19.87	20.50	0.524	Battery 1#	/
Left Side	10mm	9400/1880	RMC	0.039	0.022	-0.12	19.87	20.50	0.045	Battery 1#	/
Right Side	10mm	9400/1880	RMC	0.064	0.036	-0.16	19.87	20.50	0.073	Battery 1#	/
Bottom Side	10mm	9400/1880	RMC	0.492	0.267	0.08	19.87	20.50	0.569	Battery 1#	/
Bottom Side	10mm	9262/1852.4	RMC	**0.557**	0.304	0.09	19.96	20.50	0.631	Battery 1#	/
Bottom Side	10mm	9538/1907.6	RMC	0.434	0.220	0.00	19.86	20.50	0.503	Battery 1#	/
Bottom Side	10mm	9262/1852.4	RMC	0.644	0.351	0.00	19.96	20.50	**0.729**	Battery 2#	Yes

Table 37: Hotspot SAR test results of UMTS Band II

Copyright © Huawei Technologies Co., Ltd

7.2.4 SAR measurement Result of UMTS Band IV

Test Position of Head	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)											
Left touch	/	1413/1732.6	RMC	0.211	0.128	-0.20	23.17	23.50	0.228	Battery 1#	/
Left tilt	/	1413/1732.6	RMC	0.199	0.118	-0.16	23.17	23.50	0.215	Battery 1#	/
Right touch	/	1413/1732.6	RMC	0.215	0.128	-0.14	23.17	23.50	0.232	Battery 1#	/
Right tilt	/	1413/1732.6	RMC	0.077	0.045	0.16	23.17	23.50	0.083	Battery 1#	/
Left touch	/	1513/1752.6	RMC	**0.228**	0.152	0.15	23.15	23.50	**0.247**	Battery 1#	/
Left touch	/	1312/1712.4	RMC	0.199	0.122	0.13	23.26	23.50	0.210	Battery 1#	/
SLA-L03(New) Test at the worst case from original report											
Left touch	/	1513/1752.6	RMC	0.091	0.061	-0.10	22.65	23.50	0.110	Battery 1#	Yes

Table 38: Head SAR test results of UMTS Band IV

Test Position of Body-Worn	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
SLA-L03(New) SAR test data											
Front Side	15mm	1413/1732.6	RMC	0.328	0.199	0.03	22.39	23.50	0.424	Battery 1#	/
Back Side	15mm	1413/1732.6	RMC	**0.379**	0.231	0.11	22.39	23.50	**0.489**	Battery 1#	Yes
Back Side	15mm	1413/1732.6	RMC	0.316	0.191	-0.04	22.39	23.50	0.408	Battery 2#	/

Table 39: Body-Worn SAR test results of UMTS Band IV

Test Position of Hotspot	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
SLA-L03(New) SAR test data											
Front Side	10mm	1413/1732.6	RMC	0.358	0.203	-0.05	19.45	20.50	0.456	Battery 1#	/
Back Side	10mm	1413/1732.6	RMC	0.421	0.234	-0.08	19.45	20.50	0.536	Battery 1#	/
Left Side	10mm	1413/1732.6	RMC	0.044	0.025	-0.12	19.45	20.50	0.055	Battery 1#	/
Right Side	10mm	1413/1732.6	RMC	0.069	0.041	-0.13	19.45	20.50	0.088	Battery 1#	/
Bottom Side	10mm	1413/1732.6	RMC	0.638	0.343	-0.11	19.45	20.50	0.812	Battery 1#	/
Bottom Side	10mm	1312/1712.4	RMC	**0.764**	0.412	-0.06	19.72	20.50	**0.914**	Battery 1#	Yes
Bottom Side	10mm	1513/1752.6	RMC	0.572	0.302	-0.08	19.63	20.50	0.699	Battery 1#	/
Bottom Side	10mm	1312/1712.4	RMC	0.637	0.353	0.18	19.72	20.50	0.762	Battery 2#	/

Table 40: Hotspot SAR test results of UMTS Band IV

Copyright © Huawei Technologies Co., Ltd

7.2.5 SAR measurement Result of UMTS Band V

Test Position of Head	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)											
Left touch	0mm	4182/836.4	RMC	0.190	0.143	-0.16	22.90	24.00	0.245	Battery 1#	/
Left tilt	0mm	4182/836.4	RMC	0.112	0.062	0.12	22.90	24.00	0.144	Battery 1#	/
Right touch	0mm	4182/836.4	RMC	0.151	0.100	-0.18	22.90	24.00	0.195	Battery 1#	/
Right tilt	0mm	4182/836.4	RMC	0.066	0.039	0.11	22.90	24.00	0.085	Battery 1#	/
Left touch	0mm	4233/846.6	RMC	0.195	0.148	0.11	22.70	24.00	0.263	Battery 1#	/
Left touch	0mm	4132/826.4	RMC	0.180	0.138	0.14	22.80	24.00	0.237	Battery 1#	/
SLA-L03(New) Test at the worst case from original report											
Left touch	0mm	4233/846.6	RMC	**0.276**	0.209	0.19	22.51	24.00	**0.389**	Battery 1#	Yes

Table 41: Head SAR test results of UMTS Band V

Test Position of Body-Worn	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)											
Front Side	10mm	4182/836.4	RMC	0.083	0.057	0.02	22.90	24.00	0.107	Battery 1#	/
Back Side	10mm	4182/836.4	RMC	0.178	0.125	0.18	22.90	24.00	0.229	Battery 1#	/
Back Side	10mm	4233/846.6	RMC	0.212	0.165	0.08	22.70	24.00	0.286	Battery 1#	/
Back Side	10mm	4132/826.4	RMC	0.183	0.130	-0.20	22.80	24.00	0.241	Battery 1#	/
SLA-L03(New) Test at the worst case from original report											
Back Side	10mm	4233/846.6	RMC	**0.371**	0.291	-0.02	22.51	24.00	**0.523**	Battery 1#	Yes

Table 42: Body-Worn SAR test results of UMTS Band V

Test Position of Hotspot	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)											
Front Side	10mm	4182/836.4	RMC	0.083	0.057	0.02	22.90	24.00	0.107	Battery 1#	/
Back Side	10mm	4182/836.4	RMC	0.178	0.125	0.18	22.90	24.00	0.229	Battery 1#	/
Left Side	10mm	4182/836.4	RMC	0.123	0.079	-0.08	22.90	24.00	0.158	Battery 1#	/
Right Side	10mm	4182/836.4	RMC	0.168	0.105	0.06	22.90	24.00	0.216	Battery 1#	/
Bottom Side	10mm	4182/836.4	RMC	0.018	0.009	0.15	22.90	24.00	0.023	Battery 1#	/
Back Side	10mm	4233/846.6	RMC	0.212	0.165	0.08	22.70	24.00	0.286	Battery 1#	/
Back Side	10mm	4132/826.4	RMC	0.183	0.130	-0.20	22.80	24.00	0.241	Battery 1#	/
SLA-L03(New) Test at the worst case from original report											
Back Side	10mm	4233/846.6	RMC	**0.371**	0.291	-0.02	22.51	24.00	**0.523**	Battery 1#	Yes

Table 43: Hotspot SAR test results of UMTS Band V

Copyright © Huawei Technologies Co., Ltd

7.2.6 SAR measurement Result of LTE Band II

Test Position of Head	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)											
Left touch	/	18700/1860	20M QPSK 1RB#50	**0.207**	0.126	-0.11	22.10	22.50	**0.227**	Battery 1#	/
Left tilt	/	18700/1860	20M QPSK 1RB#50	0.187	0.103	0.07	22.10	22.50	0.205	Battery 1#	/
Right touch	/	18700/1860	20M QPSK 1RB#50	0.181	0.108	-0.03	22.10	22.50	0.198	Battery 1#	/
Right tilt	/	18700/1860	20M QPSK 1RB#50	0.132	0.071	0.05	22.10	22.50	0.145	Battery 1#	/
Left touch	/	18700/1860	20M QPSK 50%RB#25	0.153	0.088	0.06	21.03	22.00	0.191	Battery 1#	/
Left tilt	/	18700/1860	20M QPSK 50%RB#25	0.130	0.072	-0.06	21.03	22.00	0.163	Battery 1#	/
Right touch	/	18700/1860	20M QPSK 50%RB#25	0.130	0.077	0.05	21.03	22.00	0.163	Battery 1#	/
Right tilt	/	18700/1860	20M QPSK 50%RB#25	0.119	0.057	0.08	21.03	22.00	0.149	Battery 1#	/
SLA-L03(New) Test at the worst case from original report											
Left touch	/	18700/1860	20M QPSK 1RB#50	0.084	0.053	0.18	21.74	22.50	0.100	Battery 1#	Yes

Table 44: Head SAR test results of LTE Band II

Test Position of Body-Worn	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
SLA-L03(New) SAR test data											
Front Side	15mm	19100/1900	20M QPSK 1RB#50	0.275	0.162	0.02	22.29	22.50	0.289	Battery 1#	/
Back Side	15mm	19100/1900	20M QPSK 1RB#50	0.372	0.212	0.03	22.29	22.50	0.390	Battery 1#	/
Front Side	15mm	18900/1880	20M QPSK 50%RB#0	0.236	0.138	-0.17	20.84	22.00	0.308	Battery 1#	/
Back Side	15mm	18900/1880	20M QPSK 50%RB#0	0.338	0.188	-0.09	20.84	22.00	0.441	Battery 1#	/
Back Side	15mm	18900/1880	20M QPSK 50%RB#0	**0.400**	0.227	-0.02	20.84	22.00	**0.522**	Battery 2#	Yes

Table 45: Body-Worn SAR test results of LTE Band II

Copyright © Huawei Technologies Co., Ltd

Test Position of Hotspot	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
SLA-L03(New) SAR test data											
Front Side	10mm	18900/1880	20M QPSK 1RB#50	0.268	0.153	0.19	19.44	20.00	0.305	Battery 1#	/
Back Side	10mm	18900/1880	20M QPSK 1RB#50	0.461	0.240	-0.02	19.44	20.00	0.524	Battery 1#	/
Left Side	10mm	18900/1880	20M QPSK 1RB#50	0.025	0.014	0.18	19.44	20.00	0.028	Battery 1#	/
Right Side	10mm	18900/1880	20M QPSK 1RB#50	0.067	0.038	0.05	19.44	20.00	0.076	Battery 1#	/
Bottom Side	10mm	18900/1880	20M QPSK 1RB#50	**0.485**	0.262	0.08	19.44	20.00	**0.552**	Battery 1#	Yes
Front Side	10mm	18900/1880	20M QPSK 50%RB#25	0.227	0.127	-0.18	19.36	20.00	0.263	Battery 1#	/
Back Side	10mm	18900/1880	20M QPSK 50%RB#25	0.360	0.204	-0.11	19.36	20.00	0.417	Battery 1#	/
Left Side	10mm	18900/1880	20M QPSK 50%RB#25	0.027	0.015	0.13	19.36	20.00	0.032	Battery 1#	/
Right Side	10mm	18900/1880	20M QPSK 50%RB#25	0.064	0.036	-0.01	19.36	20.00	0.075	Battery 1#	/
Bottom Side	10mm	18900/1880	20M QPSK 50%RB#25	0.462	0.240	0.08	19.36	20.00	0.535	Battery 1#	/
Bottom Side	10mm	18900/1880	20M QPSK 1RB#50	0.432	0.234	0.08	19.44	20.00	0.491	Battery 2#	/

Table 46: Hotspot SAR test results of LTE Band II

Copyright © Huawei Technologies Co., Ltd

7.2.7 SAR measurement Result of LTE Band IV

Test Position of Head	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)											
Left touch	/	20300/1745	20M QPSK 1RB#0	**0.142**	0.094	-0.04	22.22	22.50	**0.151**	Battery 1#	/
Left tilt	/	20300/1745	20M QPSK 1RB#0	0.124	0.070	0.03	22.22	22.50	0.132	Battery 1#	/
Right touch	/	20300/1745	20M QPSK 1RB#0	0.132	0.089	0.07	22.22	22.50	0.141	Battery 1#	/
Right tilt	/	20300/1745	20M QPSK 1RB#0	0.078	0.036	0.05	22.22	22.50	0.083	Battery 1#	/
Left touch	/	20300/1745	20M QPSK 50%RB#25	0.117	0.074	0.02	21.16	22.00	0.142	Battery 1#	/
Left tilt	/	20300/1745	20M QPSK 50%RB#25	0.108	0.060	0.09	21.16	22.00	0.131	Battery 1#	/
Right touch	/	20300/1745	20M QPSK 50%RB#25	0.120	0.070	0.02	21.16	22.00	0.146	Battery 1#	/
Right tilt	/	20300/1745	20M QPSK 50%RB#25	0.063	0.028	0.04	21.16	22.00	0.076	Battery 1#	/
SLA-L03(New) Test at the worst case from original report											
Left touch	/	20300/1745	20M QPSK 1RB#0	0.102	0.067	0.09	21.50	22.50	0.128	Battery 1#	Yes

Table 47: Head SAR test results of LTE Band IV

Test Position of Body-Worn	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
SLA-L03(New) SAR test data											
Front Side	15mm	20300/1745	20M QPSK 1RB#50	0.251	0.153	-0.11	21.96	22.50	0.284	Battery 1#	/
Back Side	15mm	20300/1745	20M QPSK 1RB#50	0.286	0.173	0.00	21.96	22.50	0.324	Battery 1#	/
Front Side	15mm	20300/1745	20M QPSK 50%RB#0	0.187	0.111	-0.03	20.89	22.00	0.241	Battery 1#	/
Back Side	15mm	20300/1745	20M QPSK 50%RB#0	0.217	0.127	-0.06	20.89	22.00	0.280	Battery 1#	/
Back Side	15mm	20300/1745	20M QPSK 1RB#50	**0.292**	0.179	-0.18	21.96	22.50	**0.331**	Battery 2#	Yes

Table 48: Body-Worn SAR test results of LTE Band IV

Copyright © Huawei Technologies Co., Ltd

Test Position of Hotspot	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
SLA-L03(New) SAR test data											
Front Side	10mm	20300/1745	20M QPSK 1RB#50	0.246	0.139	0.02	19.48	20.00	0.277	Battery 1#	/
Back Side	10mm	20300/1745	20M QPSK 1RB#50	0.304	0.174	-0.15	19.48	20.00	0.343	Battery 1#	/
Left Side	10mm	20300/1745	20M QPSK 1RB#50	0.039	0.022	-0.11	19.48	20.00	0.044	Battery 1#	/
Right Side	10mm	20300/1745	20M QPSK 1RB#50	0.050	0.029	-0.06	19.48	20.00	0.056	Battery 1#	/
Bottom Side	10mm	20300/1745	20M QPSK 1RB#50	0.494	0.269	0.12	19.48	20.00	0.557	Battery 1#	/
Front Side	10mm	20300/1745	20M QPSK 50%RB#0	0.239	0.136	-0.02	19.39	20.00	0.275	Battery 1#	/
Back Side	10mm	20300/1745	20M QPSK 50%RB#0	0.313	0.177	-0.01	19.39	20.00	0.360	Battery 1#	/
Left Side	10mm	20300/1745	20M QPSK 50%RB#0	0.043	0.024	0.05	19.39	20.00	0.049	Battery 1#	/
Right Side	10mm	20300/1745	20M QPSK 50%RB#0	0.046	0.027	0.10	19.39	20.00	0.052	Battery 1#	/
Bottom Side	10mm	20300/1745	20M QPSK 50%RB#0	0.506	0.275	0.08	19.39	20.00	0.582	Battery 1#	/
Bottom Side	10mm	20300/1745	20M QPSK 50%RB#0	**0.597**	0.319	0.09	19.39	20.00	**0.687**	Battery 2#	Yes

Table 49: Hotspot SAR test results of LTE Band IV

Copyright © Huawei Technologies Co., Ltd

7.2.8 SAR measurement Result of LTE Band V

Test Position of Head	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)											
Left touch	/	20600/844	10M QPSK 1RB#25	0.185	0.140	-0.07	22.46	22.50	0.187	Battery 1#	/
Left tilt	/	20600/844	10M QPSK 1RB#25	0.124	0.085	0.05	22.46	22.50	0.125	Battery 1#	/
Right touch	/	20600/844	10M QPSK 1RB#25	0.116	0.078	-0.07	22.46	22.50	0.117	Battery 1#	/
Right tilt	/	20600/844	10M QPSK 1RB#25	0.055	0.036	0.08	22.46	22.50	0.056	Battery 1#	/
Left touch	/	20600/844	10M QPSK 50%RB#13	0.133	0.090	0.06	21.41	22.00	0.152	Battery 1#	/
Left tilt	/	20600/844	10M QPSK 50%RB#13	0.089	0.062	0.03	21.41	22.00	0.102	Battery 1#	/
Right touch	/	20600/844	10M QPSK 50%RB#13	0.086	0.058	0.07	21.41	22.00	0.099	Battery 1#	/
Right tilt	/	20600/844	10M QPSK 50%RB#13	0.040	0.025	0.13	21.41	22.00	0.046	Battery 1#	/
SLA-L03(New) Test at the worst case from original report											
Left touch	/	20600/844	10M QPSK 1RB#25	**0.258**	0.195	0.07	21.67	22.50	**0.312**	Battery 1#	Yes

Table 50: Head SAR test results of LTE Band V

Test Position of Body-Worn	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)											
Front Side	10mm	20600/844	10M QPSK 1RB#25	0.084	0.065	0.11	22.46	22.50	0.085	Battery 1#	/
Back Side	10mm	20600/844	10M QPSK 1RB#25	0.109	0.080	0.18	22.46	22.50	0.110	Battery 1#	/
Front Side	10mm	20600/844	10M QPSK 50%RB#13	0.065	0.045	0.06	21.41	22.00	0.074	Battery 1#	/
Back Side	10mm	20600/844	10M QPSK 50%RB#13	0.089	0.061	0.04	21.41	22.00	0.102	Battery 1#	/
SLA-L03(New) Test at the worst case from original report											
Back Side	10mm	20600/844	10M QPSK 1RB#25	**0.346**	0.271	0.00	21.67	22.50	**0.419**	Battery 1#	Yes

Table 51: Body-Worn SAR test results of LTE Band V

Copyright © Huawei Technologies Co., Ltd

Test Position of Hotspot	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)											
Front Side	10mm	20600/844	10M QPSK 1RB#25	0.084	0.065	0.11	22.46	22.50	0.085	Battery 1#	/
Back Side	10mm	20600/844	10M QPSK 1RB#25	0.109	0.080	0.18	22.46	22.50	0.110	Battery 1#	/
Left Side	10mm	20600/844	10M QPSK 1RB#25	0.104	0.074	0.19	22.46	22.50	0.105	Battery 1#	/
Right Side	10mm	20600/844	10M QPSK 1RB#25	0.101	0.068	-0.04	22.46	22.50	0.102	Battery 1#	/
Bottom Side	10mm	20600/844	10M QPSK 1RB#25	0.012	0.006	0.17	22.46	22.50	0.012	Battery 1#	/
Front Side	10mm	20600/844	10M QPSK 50%RB#13	0.065	0.045	0.06	21.41	22.00	0.074	Battery 1#	/
Back Side	10mm	20600/844	10M QPSK 50%RB#13	0.089	0.061	0.04	21.41	22.00	0.102	Battery 1#	/
Left Side	10mm	20600/844	10M QPSK 50%RB#13	0.057	0.039	-0.10	21.41	22.00	0.065	Battery 1#	/
Right Side	10mm	20600/844	10M QPSK 50%RB#13	0.072	0.049	0.03	21.41	22.00	0.082	Battery 1#	/
Bottom Side	10mm	20600/844	10M QPSK 50%RB#13	0.007	0.003	-0.18	21.41	22.00	0.008	Battery 1#	/
SLA-L03(New) Test at the worst case from original report											
Back Side	10mm	20600/844	10M QPSK 1RB#25	**0.346**	0.271	0.00	21.67	22.50	**0.419**	Battery 1#	Yes

Table 52: Hotspot SAR test results of LTE Band V

Copyright © Huawei Technologies Co., Ltd

7.2.9 SAR measurement Result of LTE Band VII

Test Position of Head	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)											
Left touch	0mm	21350/2560	20M QPSK 1RB#99	**0.545**	0.284	0.09	22.47	22.50	**0.549**	Battery 1#	/
Left tilt	0mm	21350/2560	20M QPSK 1RB#99	0.244	0.122	0.06	22.47	22.50	0.246	Battery 1#	/
Right touch	0mm	21350/2560	20M QPSK 1RB#99	0.355	0.176	0.03	22.47	22.50	0.357	Battery 1#	/
Right tilt	0mm	21350/2560	20M QPSK 1RB#99	0.150	0.070	0.01	22.47	22.50	0.151	Battery 1#	/
Left touch	0mm	21100/2535	20M QPSK 50%RB#50	0.494	0.260	0.05	21.61	22.00	0.540	Battery 1#	/
Left tilt	0mm	21100/2535	20M QPSK 50%RB#50	0.181	0.091	0.07	21.61	22.00	0.198	Battery 1#	/
Right touch	0mm	21100/2535	20M QPSK 50%RB#50	0.267	0.133	0.08	21.61	22.00	0.292	Battery 1#	/
Right tilt	0mm	21100/2535	20M QPSK 50%RB#50	0.139	0.065	0.05	21.61	22.00	0.152	Battery 1#	/
SLA-L03(New) Test at the worst case from original report											
Left touch	0mm	21350/2560	20M QPSK 1RB#99	0.213	0.122	-0.18	22.00	22.50	0.239	Battery 1#	Yes

Table 53: Head SAR test results of LTE Band VII

Test Position of Body-Worn	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)											
Front Side	10mm	21350/2560	20M QPSK 1RB#99	0.738	0.405	0.03	22.47	22.50	0.743	Battery 1#	/
Back Side	10mm	21350/2560	20M QPSK 1RB#99	**0.815**	0.432	0.06	22.47	22.50	**0.821**	Battery 1#	/
Back Side	10mm	20850/2510	20M QPSK 1RB#99	0.775	0.403	0.14	22.29	22.50	0.813	Battery 1#	/
Back Side	10mm	21100/2535	20M QPSK 1RB#99	0.760	0.397	0.05	22.21	22.50	0.812	Battery 1#	/
Front Side	10mm	21100/2535	20M QPSK 50%RB#49	0.589	0.033	0.13	21.61	22.00	0.644	Battery 1#	/
Back Side	10mm	21350/2560	20M QPSK 50%RB#49	0.726	0.396	0.11	21.61	22.00	0.794	Battery 1#	/
Back Side	10mm	21350/2560	20M QPSK 100%RB#0	0.665	0.341	0.12	21.54	22.00	0.739	Battery 1#	/
SLA-L03(New) Test at the worst case from original report											
Back Side	10mm	21350/2560	20M QPSK 1RB#99	0.730	0.375	-0.16	22.00	22.50	0.819	Battery 1#	Yes
Back Side-Repeated	10mm	21350/2560	20M QPSK 1RB#99	0.721	0.381	0.14	22.00	22.50	0.726	Battery 1#	/

Table 54: Body-Worn SAR test results of LTE Band VII

Copyright © Huawei Technologies Co., Ltd

Test Position of Hotspot	Dist.	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
				1-g	10-g						
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)											
Front Side	10mm	21350/2560	20M QPSK 1RB#99	0.738	0.405	0.03	22.47	22.50	0.743	Battery 1#	/
Back Side	10mm	21350/2560	20M QPSK 1RB#99	**0.815**	0.432	0.06	22.47	22.50	**0.821**	Battery 1#	/
Back Side	10mm	20850/2510	20M QPSK 1RB#99	0.775	0.403	0.14	22.29	22.50	0.813	Battery 1#	/
Back Side	10mm	21100/2535	20M QPSK 1RB#99	0.760	0.397	0.05	22.21	22.50	0.812	Battery 1#	/
Left Side	10mm	21350/2560	20M QPSK 1RB#99	0.448	0.253	0.06	22.47	22.50	0.451	Battery 1#	/
Right Side	10mm	21350/2560	20M QPSK 1RB#99	0.158	0.090	-0.07	22.47	22.50	0.159	Battery 1#	/
Bottom Side	10mm	21350/2560	20M QPSK 1RB#99	0.676	0.325	-0.06	22.47	22.50	0.681	Battery 1#	/
Front Side	10mm	21100/2535	20M QPSK 50%RB#49	0.589	0.033	0.13	21.61	22.00	0.644	Battery 1#	/
Back Side	10mm	21350/2560	20M QPSK 50%RB#49	0.726	0.396	0.11	21.61	22.00	0.794	Battery 1#	/
Left Side	10mm	21100/2535	20M QPSK 50%RB#49	0.382	0.183	0.08	21.61	22.00	0.418	Battery 1#	/
Right Side	10mm	21100/2535	20M QPSK 50%RB#49	0.121	0.073	0.03	21.61	22.00	0.132	Battery 1#	/
Bottom Side	10mm	21100/2535	20M QPSK 50%RB#49	0.550	0.265	-0.11	21.61	22.00	0.602	Battery 1#	/
Back Side	10mm	21350/2560	20M QPSK 100%RB#0	0.665	0.341	0.12	21.54	22.00	0.739	Battery 1#	/
SLA-L03(New) Test at the worst case from original report											
Back Side	10mm	21350/2560	20M QPSK 1RB#99	0.730	0.375	-0.16	22.00	22.50	0.819	Battery 1#	Yes

Table 55: Hotspot SAR test results of LTE Band VII

Copyright © Huawei Technologies Co., Ltd

7.2.10 SAR measurement Result of WiFi 2.4G

Test Position of Head	Dist.	Test channel /Freq.(MHz)	Test Mode	Area Scan 1-g SAR (W/kg)	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled 1-g SAR (W/kg)	Actual duty factor	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
					1-g	10-g								
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)														
Left touch	/	11/2462	802.11b	0.318	0.314	0.164	0.08	16.23	17.50	0.421	97.50%	0.432	Battery1#	/
Left tilt	/	11/2462	802.11b	0.362	0.357	0.177	-0.11	16.23	17.50	0.478	97.50%	0.490	Battery1#	/
Right touch	/	11/2462	802.11b	0.635	**0.639**	0.294	-0.10	16.23	17.50	0.856	97.50%	**0.878**	Battery1#	/
Right tilt	/	11/2462	802.11b	0.581	0.583	0.281	-0.58	16.23	17.50	0.781	97.50%	0.801	Battery1#	/
Right touch	/	1/2412	802.11b	/	0.567	0.273	0.02	16.13	17.50	0.777	97.50%	0.797	Battery1#	/
Right touch	/	11/2462	802.11b	/	0.618	0.279	-0.10	16.23	17.50	0.828	97.50%	0.849	Battery 2#	/

Table 56: Head SAR test results of WiFi 2.4G

Test Position of Body-Worn	Dist.	Test channel /Freq.(MHz)	Test Mode	Area Scan 1-g SAR (W/kg)	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled 1-g SAR (W/kg)	Actual duty factor	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
					1-g	10-g								
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)														
Front Side	10mm	11/2462	802.11b	0.096	0.096	0.050	0.13	16.23	17.50	0.129	97.50%	0.132	Battery1#	/
Back Side	10mm	11/2462	802.11b	0.142	**0.149**	0.073	0.16	16.23	17.50	0.200	97.50%	**0.205**	Battery1#	/

Table 57: Body-Worn SAR test results of WiFi 2.4G

Test Position of Hotspot	Dist.	Test channel /Freq.(MHz)	Test Mode	Area Scan 1-g SAR (W/kg)	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled 1-g SAR (W/kg)	Actual duty factor	Reported 1-g SAR (W/kg)	Accessory Information	SAR Plot.
					1-g	10-g								
Test data of SLA-L03 from original report (report NO.: I17N00776-SAR)														
Front Side	10mm	11/2462	802.11b	0.096	/	/	0.13	16.23	17.50	/	97.50%	/	Battery1#	/
Back Side	10mm	11/2462	802.11b	0.142	**0.149**	0.073	0.16	16.23	17.50	0.200	97.50%	**0.205**	Battery1#	/
Left Side	10mm	11/2462	802.11b	0.076	/	/	-0.13	16.23	17.50	/	97.50%	/	Battery1#	/
Top Side	10mm	11/2462	802.11b	0.135	/	/	-0.03	16.23	17.50	/	97.50%	/	Battery1#	/

Table 58: Hotspot SAR test results of WiFi 2.4G

Copyright © Huawei Technologies Co., Ltd

Mode	Tune-up (dBm)	Tune-up (mW)	Hightest Reported SAR(W/kg)	Adjusted SAR (W/kg)	SAR test
802.11b	17.50	56.23	0.878	/	Yes
802.11g	15.00	31.62	/	0.494	No
802.11n 20M	14.00	25.12	/	0.392	No

Note:

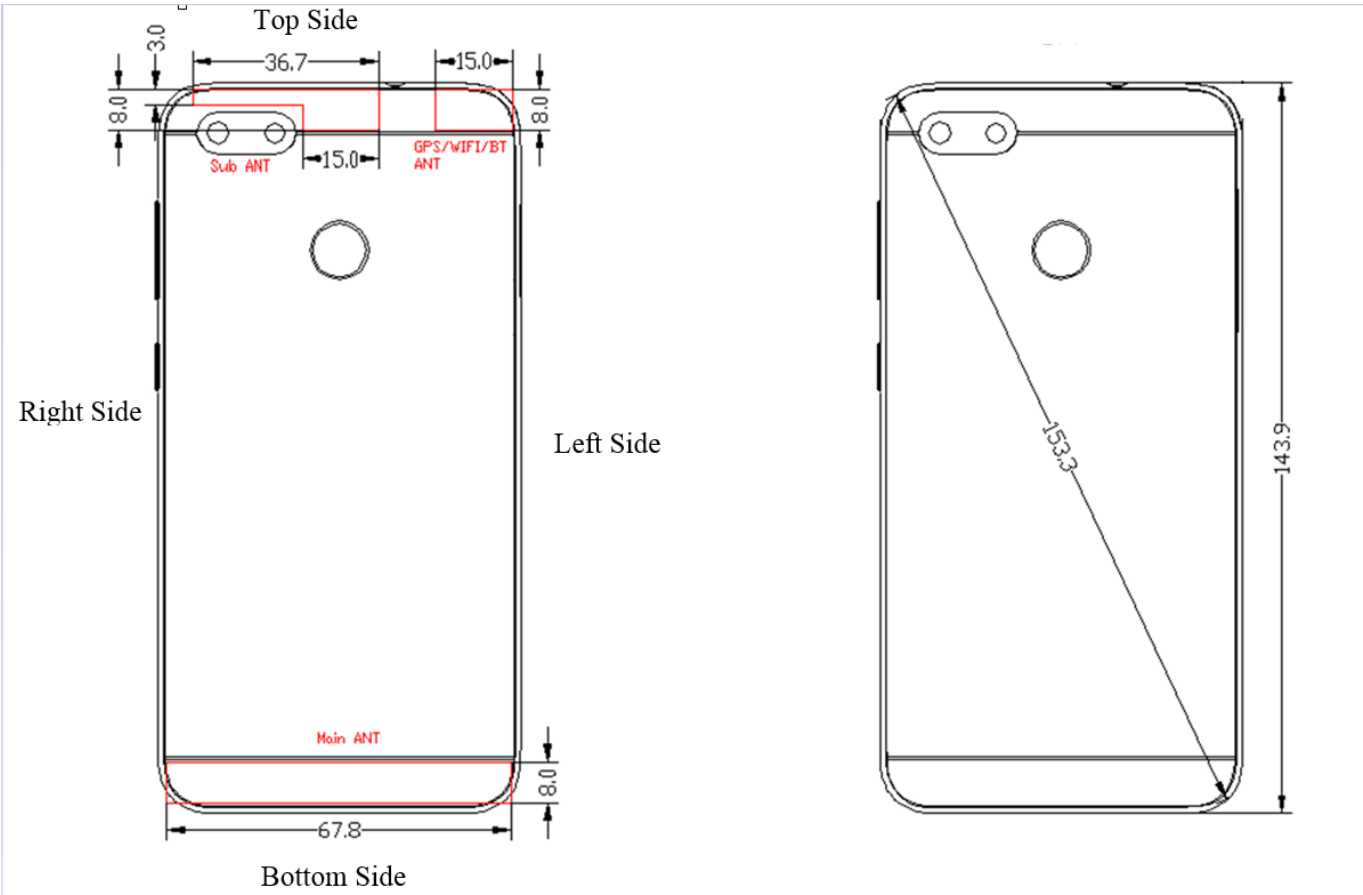
1) Per KDB248227D01, SAR is measured for 2.4 GHz 802.11b DSSS using the initial test position procedure. The highest *reported* SAR for DSSS is adjusted by the ratio of OFDM 802.11g/n to DSSS specified maximum output power and the adjusted SAR is < 1.2 W/kg, so SAR for 802.11g/n is not required.

Copyright © Huawei Technologies Co., Ltd

7.3 Multiple Transmitter Evaluation

The following tables list information which is relevant for the decision if a simultaneous transmit evaluation is necessary according to FCC KDB 447498D01 General RF Exposure Guidance v06.

The location of the antennas inside the device is shown as below picture:



Mode	Exposure Condition	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
Main ant	Hotspot	Yes	Yes	Yes	Yes	No	Yes
WiFi Ant/BT	Hotspot	Yes	Yes	Yes	No	Yes	No

Table 59: Sides for Hotspot SAR testing

Note:

1) Per KDB 941225 D06 and KDB 648474 D04, particular DUT edges were not required to be evaluated for Hotspot SAR if the antenna-to-edge distance is greater than 2.5cm;

2)The Sub ANT does not have the transmitter function.

Copyright © Huawei Technologies Co., Ltd

7.3.1 Stand-alone SAR test exclusion

Per FCC KDB 447498D01v06, the 1-g SAR and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity 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

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

Mode	Position	P_{max} (dBm)*	P_{max} (mW)	Distance (mm)	f (GHz)	Calculation Result	SAR Exclusion threshold	SAR test exclusion
BT	Head	9.00	7.94	5	2.480	2.50	3.00	Yes
BT	Body-Worn	9.00	7.94	15	2.480	0.83	3.00	Yes

Table 60: Standalone SAR test exclusion for BT

Note:

1)* - maximum possible output power declared by manufacturer

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

(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] •

[√f(GHz)/x] W/kg for test separation distances ≤ 50 mm,where x = 7.5 for 1-g SAR and x = 18.75 for 10-g SAR.

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

Mode	Position	P_{max} (dBm)*	P_{max} (mW)	Distance (mm)	f (GHz)	X	Estimated SAR (W/kg)*
BT	Head	9.00	7.94	5	2.480	7.50	0.334
BT	Body-worn	9.00	7.94	15	2.480	7.50	0.111

Table 61: Estimated SAR calculation for BT

Note:

1) * - maximum possible output power declared by manufacturer

Copyright © Huawei Technologies Co., Ltd

7.3.2 Simultaneous Transmission Possibilities

The Simultaneous Transmission Possibilities of this device are as below:

NO.	Simultaneous Tx Combination	Head	Body-worn	Hotspot
1	GSM Voice + BT	Yes	Yes	N/A
2	GSM DATA + BT	N/A	Yes	N/A
3	GSM Voice + WiFi 2.4G	Yes	Yes	N/A
4	GSM DATA + WiFi 2.4G	N/A	Yes	Yes
5	UMTS Voice + BT	Yes	Yes	N/A
6	UMTS Data + BT	N/A	Yes	N/A
7	UMTS Voice + WiFi 2.4G	Yes	Yes	N/A
8	UMTS Data + WiFi 2.4G	N/A	Yes	Yes
9	LTE + WiFi 2.4G	Yes*	Yes*	Yes
10	LTE + BT	Yes*	Yes*	N/A

Table 62: Simultaneous Transmission Possibilities

Note:

1) Wi-Fi and Bluetooth share the same Tx antenna and can't transmit simultaneously.

2) The device does not support DTM function.

3) * VoLTE or pre-installed VOIP applications are considered.

Copyright © Huawei Technologies Co., Ltd

7.3.3 SAR Summation Scenario

Test Position		Main antenna SAR Max									WiFi/BT antenna SAR Max		Σ1-g SAR (1.6 W/kg Limit)
		GSM 850	GSM 1900	UMTS B2	UMTS B4	UMTS B5	LTE B2	LTE B4	LTE B5	LTE B7	WiFi 2.4G	BT	
Head	Left touch	0.282	0.179	0.552	0.247	0.389	0.227	0.151	0.312	0.549	0.432	0.334	0.984
	Left tilt	0.184	0.124	0.423	0.215	0.144	0.205	0.132	0.125	0.246	0.490	0.334	0.913
	Right touch	0.418	0.138	0.368	0.232	0.195	0.198	0.146	0.117	0.357	0.878	0.334	**1.296**
	Right tilt	0.170	0.099	0.247	0.083	0.085	0.149	0.083	0.056	0.152	0.801	0.334	1.048
Body Worn	Front side	0.513	0.101	0.349	0.424	0.107	0.308	0.284	0.085	0.743	0.132	0.110	0.875
	Back side	0.691	0.351	0.553	0.489	0.523	0.522	0.331	0.419	0.821	0.205	0.110	1.026
Hotspot	Front side	0.513	0.161	0.284	0.456	0.107	0.305	0.277	0.085	0.743	0.205	/	0.948
	Back side	0.691	0.336	0.524	0.536	0.523	0.524	0.360	0.419	0.821	0.205	/	1.026
	Left side	0.480	0.021	0.045	0.055	0.158	0.032	0.049	0.105	0.451	0.205	/	0.685
	Right side	0.526	0.038	0.073	0.088	0.216	0.076	0.056	0.102	0.159	/	/	0.526
	Top side	/	/	/	/	/	/	/	/	/	0.205	/	0.205
	Bottom side	0.033	0.605	0.729	0.914	0.023	0.552	0.687	0.012	0.681	/	/	0.914

Table 63: SAR Simultaneous Tx Combination of Main antenna and WiFi/BT antenna.

7.3.4 Simultaneous Transmission Conclusion

The above numeral summed SAR results is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore simultaneous transmission SAR with Volume Scans is not required per KDB 447498 D01v06.

Copyright © Huawei Technologies Co., Ltd

Appendix A. System Check Plots
(Pls See Appendix No.: SYBH(Z-SAR)002102017-2A, total: 10 pages)

Appendix B. SAR Measurement Plots
(Pls See Appendix No.: SYBH(Z-SAR)002102017-2B, total: 24 pages)

Appendix C. Calibration Certificate
(Pls See Appendix No.: SYBH(Z-SAR)002102017-2C, total: 72 pages)

Appendix D. Photo documentation
(Pls See Appendix No.: SYBH(Z-SAR)002102017-2D, total: 5 pages)

End

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd