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FCC SAR Compliance Test Report

Product Name: Smart Phone

Model: NAM-LX9

Report No.: SYBH(Z-SAR)20210816008001

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Prepared by:
(Test Engineer)
2021-09-29

Zheng Xuan

Zheng Xuan

Reviewed by:
(Test Engineer)
2021-09-29

Lin Jiekai

Lin Jiekai

Approved by:
(Lab Manager)
2021-09-29

Sun Shaobin

Sun Shaobin

Date

Name

Signature

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

No.2, New City Avenue, Songshan Lake Sci. & Tech. Industry Park,
Dongguan, Guangdong, 523808, P.R.C Tel: +86 769 23830808 Fax: +86 769 23837628

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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	11
1.4	Test specification(s)	12
1.5	Testing laboratory	12
1.6	Applicant and Manufacturer	12
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
6.1.5	Product Specific 10-g SAR Exposure Condition.....	32
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	38
6.6	LTE CA Specification	41
6.6.1	LTE CA combinations specification	41
6.6.2	Test procedure for downlink CA	42
6.6.3	Test procedure for Intra-band uplink CA.....	42
6.7	Wi-Fi Test Configuration	44
6.7.1	Initial Test Position Procedure	44
6.7.2	Initial Test Configuration Procedure	44
6.7.3	Sub Test Configuration Procedure	44
6.7.4	2.4G Wi-Fi SAR Test Procedures.....	45
6.7.5	U-NII-1 and U-NII-2A Bands	46
6.7.6	U-NII-2C and U-NII-3 Bands	46
6.7.7	OFDM Transmission Mode SAR Test Channel Selection Requirements	47
6.7.8	MIMO SAR Considerations.....	47
6.8	Dynamic antenna switching specification	48
6.9	Power Reduction Specification	49
6.9.1	Power Reduction Specification of 2G&3G&4G Second Antenna.....	50
6.9.2	Power Reduction Specification of 2G&3G&4G Main antenna.....	50
6.9.3	Power Reduction Specification of Wi-Fi antennas.....	51
6.9.4	BT Test Configuration	52

7	SAR Measurement Results	53
7.1	Conducted power measurements	53
7.2	SAR measurement Results	53
7.2.1	SAR measurement Results of GSM850	55
7.2.2	SAR measurement Results of GSM1900	57
7.2.3	SAR measurement Results of UMTS Band II	59
7.2.4	SAR measurement Results of UMTS Band IV	61
7.2.5	SAR measurement Results of UMTS Band V	63
7.2.6	SAR measurement Results of LTE Band 2	65
7.2.7	SAR measurement Results of LTE Band 5	68
7.2.8	SAR measurement Results of LTE Band 7	71
7.2.9	SAR measurement Results of LTE Band 12	75
7.2.10	SAR measurement Results of LTE Band 26	78
7.2.11	SAR measurement Results of LTE Band 38	81
7.2.12	SAR measurement Results of LTE Band 41	82
7.2.13	SAR measurement Results of LTE Band 66	86
7.2.14	SAR measurement Results of 2.4G Wi-Fi	89
7.2.15	SAR measurement Results of 5G Wi-Fi	92
7.2.16	SAR measurement Results of BT	97
7.3	Multiple Transmitter Evaluation	98
7.3.1	Stand-alone SAR test exclusion	99
7.3.2	Simultaneous Transmission Possibilities	100
7.3.3	SAR Summation Scenario	102
7.3.4	Simultaneous Transmission Conclusion	104
	Appendix A. System Check Plots	105
	Appendix B. SAR Measurement Plots	105
	Appendix C. Conducted Power Test Results	105
	Appendix D. Conducted power test results for certain power reduction mechanisms validation	105
	Appendix E. Calibration Certificate	105
	Appendix F. Photo Documentation	105
	Appendix G. Antenna Location	105



※ ※ Modified History ※ ※

REV.	DESCRIPTION	ISSUED DATE	REMARK
Rev.1.0	Initial Test Report Release	2021-09-29	Zheng Xuan

1 General Information

1.1 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing are below Table 1.

Band	Max Reported SAR(W/kg)			
	1-g Head	1-g Body-worn (15mm) *	1-g Hotspot (10mm)	Product Specific 10-g SAR (0mm)**
GSM850	0.18	0.29	0.35	/
GSM1900	0.51	0.15	0.61	/
UMTS Band II	0.59	0.26	0.70	/
UMTS Band IV	0.50	0.65	1.00	/
UMTS Band V	0.24	0.34	0.51	/
LTE Band 2	0.53	0.25	0.76	/
LTE Band 4	0.39	0.49	0.69	/
LTE Band 5	0.22	0.28	0.42	/
LTE Band 7	0.67	0.32	0.63	/
LTE Band 12	0.12	0.22	0.28	/
LTE Band 17	0.12	0.22	0.28	/
LTE Band 26	0.20	0.28	0.42	/
LTE Band 38	0.80	0.38	0.64	/
LTE Band 41	0.80	0.38	0.64	/
LTE Band 66	0.39	0.49	0.69	/
2.4G Wi-Fi	0.44	0.12	0.28	/
5G Wi-Fi	0.76	0.64	0.83	2.06
BT	0.17	0.02	0.10	/
The highest reported SAR for Head, Body Worn, Hotspot, Product Specific 10-g and Simultaneous transmission exposure conditions are 0.80 W/kg, 0.65 W/kg, 1.00 W/kg, 2.06 W/kg and 1.54W/kg per KDB690783 D01.				

Table 1: Summary of test result

Note:

1)* For body worn operation, this device has been tested with 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) According to TCB workshop October, 2014 RF Exposure Procedures Update(Overlapping LTE Bands):

a) SAR for LTE Band 17 (Frequency range:704-716 MHz) is covered by LTE Band 12 (Frequency range:699-716 MHz) due to similar frequency range, same maximum tune up limit and same channel bandwidth.

b) SAR for LTE Band 4 (Frequency range: 1710-1755 MHz) is covered by LTE Band 66(Frequency range:1710-1780 MHz) due to similar frequency range, same maximum tune up limit and same channel bandwidth etc.

c) SAR for LTE Band 38 (Frequency range:2570-2620 MHz) body exposure condition and head exposure condition of second antenna is covered by LTE Band 41 (Frequency range:2496-2690 MHz) due to similar frequency range, same maximum tune up limit and same channel bandwidth.

The device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled 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, and had been tested in accordance with the measurement methods and procedures specified in IEEE Std 1528-2013.

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

1.3 EUT Description

Device type :	Portable device		
Product Name:	Smart Phone		
Models:	NAM-LX9		
SN :	1#:EJM0121716000050 2#:EJM0121716000045 3#:EJM0121716000058 4#:EJM0121716000029 5#:EJM0121716000061 6#:EJM0121716000097 7#:EJM0121716000068		
Exposure category:	Uncontrolled environment / general population		
Hardware version :	HL1NTHM		
Software version :	9.1.1.75M(C900E51R1P4)GPU Turbo		
Antenna type :	Internal antenna		
Test device production information	Identical Prototype		
Test modulation	GSM(GMSK/8PSK), UMTS(QPSK), LTE (QPSK/16QAM/64QAM), Wi-Fi(DSSS/OFDM), BT(GFSK)		
Device Class :	B		
HSDPA UE Category:	14		
HSUPA UE Category:	6		
DC-HSDPA UE Category	24		
Supporting mode(s) and Operating frequency range(s)	Band	Tx (MHz)	Rx (MHz)
	GSM850	824-849	869 - 894
	GSM1900	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 2	1850-1910	1930-1990
	LTE Band 4	1710-1755	2110-2155
	LTE Band 5	824-849	869-894
	LTE Band 7	2500-2570	2620 -2690
	LTE Band 12	699-716	729-746
	LTE Band 17	704-716	734-746
	LTE Band 26	814-849	859-894
	LTE Band 38	2570-2620	2570-2620
	LTE Band 41	2496-2690	2496-2690
	LTE Band 66	1710-1780	2110-2200
	2.4G Wi-Fi	2400-2483.5	
	5G Wi-Fi	5150-5350 5470-5725 5725-5850	
	BT	2400-2483.5	
	NFC	13.56	

Power class :	4, tested with power level 5(GSM900)
	1, tested with power level 0(GSM1800)
	3, tested with power control "all 1"(UMTS Bands)
	3, tested with power control all Max.(LTE Bands)
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 2 BW=1.4MHz)
	18615-18900-19185(LTE Band 2 BW=3MHz)
	18625-18900-19175(LTE Band 2 BW=5MHz)
	18650-18900-19150(LTE Band 2 BW=10MHz)
	18675-18900-19125(LTE Band 2 BW=15MHz)
	18700-18900-19100(LTE Band 2 BW=20MHz)
	19957-20175-20393(LTE Band 4 BW=1.4MHz)
	19965-20175-20385(LTE Band 4 BW=3MHz)
	19975-20175-20375(LTE Band 4 BW=5MHz)
	20000-20175-20350(LTE Band 4 BW=10MHz)
	20025-20175-20325(LTE Band 4 BW=15MHz)
	20050-20175-20300(LTE Band 4 BW=20MHz)
	20407-20525-20643(LTE Band 5 BW=1.4MHz)
	20415-20525-20635(LTE Band 5 BW=3MHz)
	20425-20525-20625(LTE Band 5 BW=5MHz)
	20450-20525-20600(LTE Band 5 BW=10MHz)
	20775-21100-21425(LTE Band 7 BW=5MHz)
	20800-21100-21400(LTE Band 7 BW=10MHz)
	20825-21100-21375(LTE Band 7 BW=15MHz)
	20850-21100-21350(LTE Band 7 BW=20MHz)
	23017-23095-23173(LTE Band 12 BW=1.4MHz)
	23025-23095-23165(LTE Band 12 BW=3MHz)
	23035-23095-23155(LTE Band 12 BW=5MHz)
	23060-23095-23130(LTE Band 12 BW=10MHz)
	23755-23790-23825(LTE Band 17 BW=5MHz)
	23780-23790-23800(LTE Band 17 BW=10MHz)
	26697-26865-27033(LTE Band 26 BW=1.4MHz)
	26705-26865-27025(LTE Band 26 BW=3MHz)
	26715-26865-27015(LTE Band 26 BW=5MHz)
	26740-26865-26990(LTE Band 26 BW=10MHz)
	26765-26865-26965(LTE Band 26 BW=15MHz)
	37775-38000-38225(LTE Band 38 BW=5MHz)
	37800-38000-38200(LTE Band 38 BW=10MHz)
	37825-38000-38175(LTE Band 38 BW=15MHz)
	37850-38000-38150(LTE Band 38 BW=20MHz)
	39675-40148-40620-41093-41565(LTE Band 41 BW=5MHz)
	39700-40160-40620-41080-41540(LTE Band 41 BW=10MHz)
	39725-40173-40620-41068-41515(LTE Band 41 BW=15MHz)
	39750-40185-40620-41055-41490(LTE Band 41 BW=20MHz)

	131979-132322-132665(LTE Band 66 BW=1.4MHz)
	131987-132322-132657(LTE Band 66 BW=3MHz)
	131997-132322-132647(LTE Band 66 BW=5MHz)
	132022-132322-132622(LTE Band 66 BW=10MHz)
	132047-132322-132597(LTE Band 66 BW=15MHz)
	132072-132322-132572(LTE Band 66 BW=20MHz)
	11b:1-2-6-10-11
	11g:1-3-4-5-6-9-10-11
	11n(20M):1-2-3-4-5-6-9-10-11
	11n(40M):3-4-5-6-9(2.4G Wi-Fi)
	11a/11n/11ac (20M):36-52-64-100-120-140-149-157-165
	11n/11ac (40M):38-54-62-102-118-134-151-159
	11ac (80M):42-58-106-122-155(5G Wi-Fi)
	0-19-39-78(BT)

Table 3: Device information and operating configuration

Note:

1)*For 5G Wi-Fi,the device does not support channel 144(20M), channel 142(40M) and channel 138(80M).

2)*For 5G Wi-Fi,U-NII-1 and U-NII-2A and U-NII-2C does not support hotspot function.

1.3.1 General Description

NAM-LX9 is subscriber equipment in the GSM/WCDMA/LTE system. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/UMTS and GSM/GPRS/EDGE protocol processing, voice, video MMS service, GPS, AGPS, Wi-Fi, NFC etc. Externally it provides earphone port (to provide voice service), and dual SIM/single SIM card interface. NAM-LX9 is dual/single SIM smart phone. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

Battery information:

Name	Manufacturer/Trademark	Description
Rechargeable Li-ion	Huawei Technologies Co., Ltd. (Manufacturer: Sunwoda)	Battery Model: HB476489EFW Rated capacity: 4000mAh Nominal Voltage: +3.87V Charging Voltage: +4.45V
	Huawei Technologies Co., Ltd. (Manufacturer: SCUD)	

1.4 Test specification(s)

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
KDB 941225 D01	3G SAR Procedures v03r01
KDB 941225 D05	SAR for LTE Devices v02r05
KDB 941225 D05A	LTE Rel.10 KDB Inquiry Sheet v01r02
KDB 941225 D06	Hotspot SAR v02r01
KDB 447498 D01	General RF Exposure Guidance v06
KDB 648474 D04	Handsets SAR v01r03
KDB 248227 D01	SAR Guidance for IEEE 802.11 Wi-Fi SAR v02r02
KDB 865664 D01	SAR measurement 100 MHz to 6 GHz v01r04
KDB 865664 D02	RF Exposure Reporting v01r02
KDB 690783 D01	SAR Listings on Grants v01r03

1.5 Testing laboratory

Test Site	Reliability Laboratory of Huawei Technologies Co., Ltd.
Test Location	NO.2 New City Avenue Songshan Lake Sci. & Tech. Industry Park, Dongguan, Guangdong, P.R.C
Telephone	+86 769 23830808
Fax	+86 769 23837628
State of accreditation	The Test laboratory (area of testing) is accredited according to ISO/IEC 17025.

1.6 Applicant and Manufacturer

Company Name	Huawei Device Co., Ltd
Address	No.2 of Xincheng Road, Songshan Lake Zone, Dongguan, Guangdong 523808, People's Republic of China

1.7 Application details

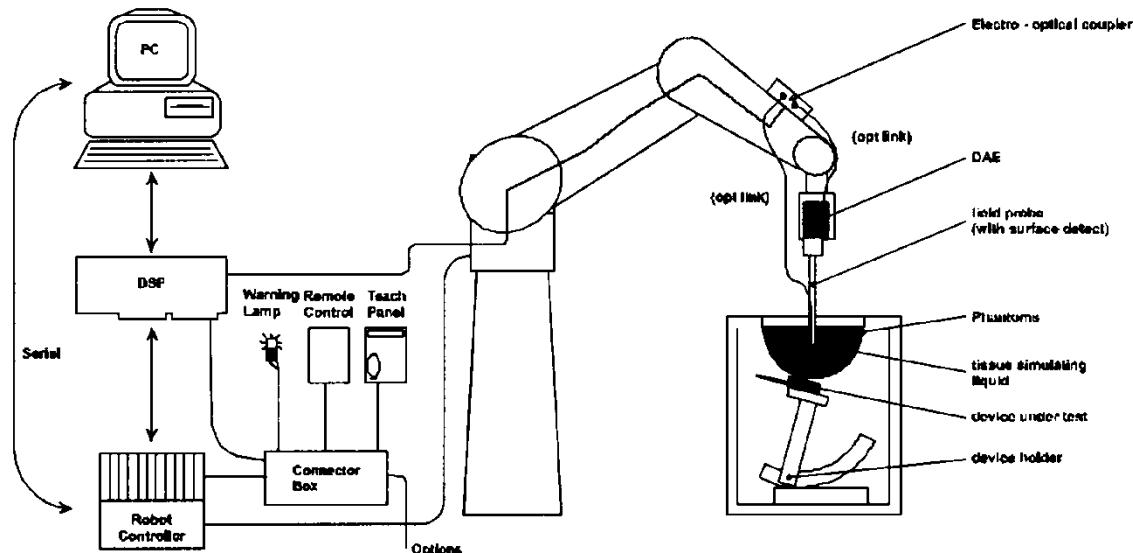
Start Date of test	2021-08-23
End Date of test	2021-09-28

1.8 Ambient Condition

Ambient temperature	18°C – 25°C
Relative Humidity	30% – 70%

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.

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-converted 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.

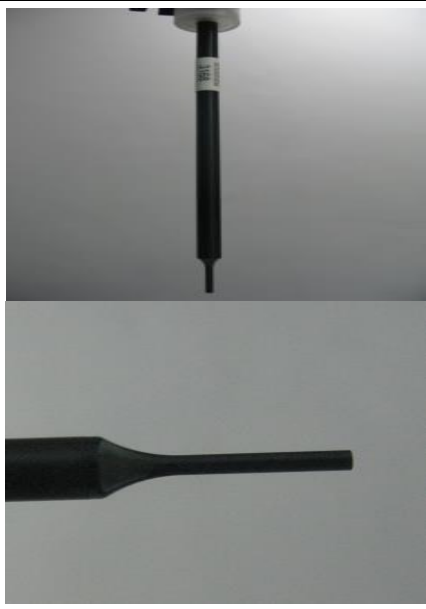
DAE

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

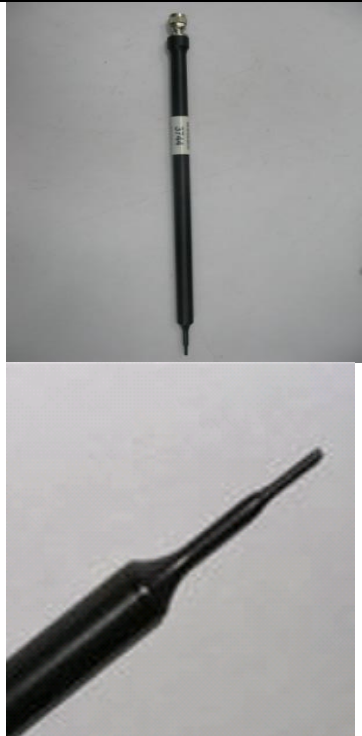
2.4 Probe description

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 μ W/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 μ W/g to > 100 mW/g; Linearity: ± 0.2 dB (noise: typically < 1 μ W/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: 1 mm	
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%	

2.5 Phantom description

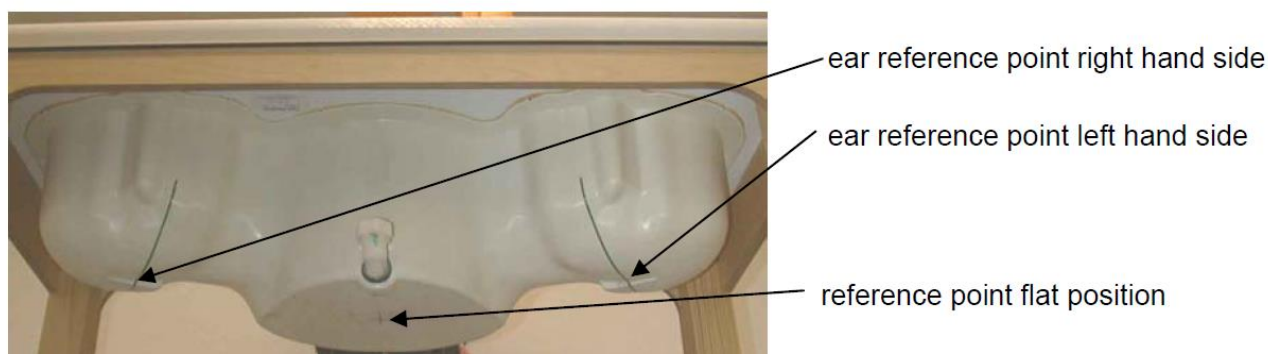
SAM Twin Phantom

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 $2 \leq \epsilon_r \leq 5$ at ≤ 3 GHz, $3 \leq \epsilon_r \leq 4$ at > 3 GHz and a loss tangent ≤ 0.05 .

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 $\epsilon = 3$ and loss tangent $\sigma = 0.02$. 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 $\pm 1^\circ$ 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.

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	3744	2021-07-28	One year
☒	SPEAG	Dosimetric E-Field Probe	EX3DV4	7350	2020-12-21	One year
☒	SPEAG	750 MHz Dipole	D750V3	1044	2019-08-30	Three years
☒	SPEAG	835 MHz Dipole	D835V2	4d166	2021-04-13	Three years
☒	SPEAG	1750 MHz Dipole	D1750V2	1123	2020-07-28	Three years
☒	SPEAG	1900 MHz Dipole	D1900V2	5d143	2020-07-28	Three years
☒	SPEAG	2450 MHz Dipole	D2450V2	860	2018-11-17	Three years
☒	SPEAG	2600 MHz Dipole	D2600V2	1077	2021-04-15	Three years
☒	SPEAG	5GHz Dipole	D5GHzV2	1155	2020-04-24	Three years
☒	SPEAG	Data acquisition electronics	DAE4	1492	2021-07-28	One year
☒	SPEAG	Data acquisition electronics	DAE4	1531	2021-02-24	One year
☒	SPEAG	Software	DASY52	N/A	NCR	NCR
☒	SPEAG	Twin Phantom	SAM	1475	NCR	NCR
☒	SPEAG	Twin Phantom	SAM	1594	NCR	NCR
☒	R & S	Universal Radio Communication Tester	CMW 500	116265	2021-07-01	One year
☒	R & S	Universal Radio Communication Tester	CMW 500	160797	2021-07-01	One year
☒	R & S	Universal Radio Communication Tester	CMW 500	169819	2021-03-13	One year
☒	Anritsu	Signal Analyzer	MS2690A	6261767335	2021-03-14	One year
☒	Anritsu	Radio Communication Analyser	MT8821C	6261952999	2021-03-14	One year
☒	Anritsu	Radio Communication Analyser	MT8821C	6201830585	2021-03-14	One year
☒	Agilent	Network Analyser	E5071C	MY46629448	2021-07-02	One year
☒	SPEAG	Dielectric Probe Kit	DAK3.5	1143	NCR	NCR
☒	Keysight	Signal Generator	E8257D	MY56440071	2020-11-09	One year
☒	MINI-CIRCUITS	Amplifier	ZHL-42W	QA1402001	NCR	NCR
☒	AR	Directional Coupler	DC7144M1	0423264	2021-07-03	One year
☒	Agilent	Dual Directional Coupler	772D	MY52180173	2020-11-09	One year
☒	R & S	Power Meter	NRP2	105880	2021-03-13	One year
☒	R & S	Power Meter Sensor	NRP8S	103084	2021-03-13	One year
☒	R & S	Power Meter	NRP2	105879	2021-03-13	One year
☒	R & S	Power Meter Sensor	NRP8S	103083	2021-03-13	One year

Table 4: List of Test and Measurement Equipment

Note:

1) Per KDB865664 D01 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 the appendix .

- There is no physical damage on the dipole;
- 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.
- 2) Network analyzer probe calibration against air, distilled water and a shorting block performed before measuring liquid parameters.
- 3) *All the equipment are within the valid period when the tests are performed.

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 %.
- For power drift measurement, DASY software supports that the reference position can be either the selected section’s grid reference point or a user point. If the E-field of power reference measurement in the default grid reference point is very small, the test lab may set the reference position to the user point near the hotspot location to avoid large measurement uncertainty.
- The “surface check” measurement tests the optical surface detection system of the DASY 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 $\pm 0.1\text{mm}$). 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 $\pm 30^\circ$.)
- 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 ($\leq 2\text{GHz}$), 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: $\Delta x_{\text{zoom}}, \Delta y_{\text{zoom}} \leq 2\text{GHz} - \leq 8\text{mm}$, 2-4GHz - $\leq 5\text{ mm}$ and 4-6 GHz- $\leq 4\text{mm}$; $\Delta z_{\text{zoom}} \leq 3\text{GHz} - \leq 5\text{ mm}$, 3-4 GHz- $\leq 4\text{mm}$ and 4-6GHz- $\leq 2\text{mm}$ 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 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.

The following table summarizes the area scan and zoom scan resolutions per FCC KDB865664 D01:

Frequency	Maximum Area Scan resolution ($\Delta x_{\text{area}}, \Delta y_{\text{area}}$)	Maximum Zoom Scan spatial resolution ($\Delta x_{\text{Zoom}}, \Delta y_{\text{Zoom}}$)	Maximum Zoom Scan spatial resolution			Minimum zoom scan volume (x,y,z)
			Uniform Grid	Graded Grad		
			$\Delta z_{\text{Zoom}}(n)$	$\Delta z_{\text{Zoom}}(1)^*$	$\Delta z_{\text{Zoom}}(n>1)^*$	
≤2GHz	≤15mm	≤8mm	≤5mm	≤4mm	≤1.5* $\Delta z_{\text{Zoom}}(n-1)$	≥30mm
2-3GHz	≤12mm	≤5mm	≤5mm	≤4mm	≤1.5* $\Delta z_{\text{Zoom}}(n-1)$	≥30mm
3-4GHz	≤12mm	≤5mm	≤4mm	≤3mm	≤1.5* $\Delta z_{\text{Zoom}}(n-1)$	≥28mm
4-5GHz	≤10mm	≤4mm	≤3mm	≤2.5mm	≤1.5* $\Delta z_{\text{Zoom}}(n-1)$	≥25mm
5-6GHz	≤10mm	≤4mm	≤2mm	≤2mm	≤1.5* $\Delta z_{\text{Zoom}}(n-1)$	≥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 compensate boundary effects on E-field probes.

3.3 Data Storage and Evaluation

Data Storage

The DASY 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 "DAE". 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 DASY 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:

$$V_i = U_i + U_i^2 \cdot cf/dcp_i$$

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:

$$\begin{aligned} \text{E-field probes:} \quad E_i &= (V_i / \text{Norm}_i \cdot \text{ConvF})^{1/2} \\ \text{H-field probes:} \quad H_i &= (V_i)^{1/2} \cdot (a_{i0} + a_{i1}f + a_{i2}f^2)/f \end{aligned}$$

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):

$$E_{\text{tot}} = (E_x^2 + E_y^2 + E_z^2)^{1/2}$$

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

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

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/cm³

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.

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

with P_{pwe} = equivalent power density of a plane wave in mW/cm²
 E_{tot} = total electric field strength in V/m
 H_{tot} = total magnetic field strength in A/m

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 if the dielectric parameters are within the tolerances of the specified target values. The measured conductivity and relative permittivity should be within $\pm 5\%$ 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

Table 5: 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

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

Ingredients	(% by weight)
Water	50-65%
Esters, Emulsifiers, Inhibitors	10-30%
Sodium salt	8-25%

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

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

Note: According to 201904 FCC TCB workshop slides for RF Exposure Procedures, FCC has permitted the use of single head tissue simulating liquid specified in IEC 62209-1 for all SAR tests. So the single head tissue simulating liquid is used for all SAR tests in this test report. The conservative $\pm 5\%$ tolerance is used in tissue dielectric parameters measurements.

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)	$\Delta\epsilon_r$	$\Delta\sigma$		
750MHz	705	42.2	0.89	40.97	0.873	-2.91%	-1.89%	20.7°C	2021-09-04
	710	42.1	0.89	40.93	0.875	-2.78%	-1.71%		
	750	41.9	0.89	40.96	0.889	-2.24%	-0.12%		
835MHz	825	41.6	0.90	40.79	0.917	-1.95%	1.92%	20.7°C	2021-09-03
	835	41.5	0.90	40.79	0.920	-1.71%	2.22%		
	850	41.5	0.92	40.72	0.923	-1.88%	0.37%		
835MHz	825	41.6	0.90	40.34	0.910	-3.03%	1.06%	21.5°C	2021-09-06
	835	41.5	0.90	40.34	0.913	-2.80%	1.40%		
	850	41.5	0.92	40.27	0.915	-2.96%	-0.50%		
1750MHz	1710	40.1	1.35	38.57	1.318	-3.82%	-2.37%	22.0°C	2021-08-23
	1730	40.1	1.36	38.56	1.326	-3.84%	-2.50%		
	1750	40.1	1.37	38.55	1.334	-3.87%	-2.63%		
	1800	40.0	1.40	38.60	1.362	-3.50%	-2.71%		
1750MHz	1710	40.1	1.35	39.12	1.302	-2.44%	-3.56%	22.0°C	2021-08-28
	1730	40.1	1.36	39.12	1.313	-2.44%	-3.46%		
	1750	40.1	1.37	39.11	1.325	-2.47%	-3.28%		
	1800	40.0	1.40	39.05	1.353	-2.38%	-3.36%		
1900MHz	1850	40.0	1.40	38.56	1.401	-3.60%	0.07%	23.0°C	2021-09-01
	1880	40.0	1.40	38.48	1.423	-3.80%	1.64%		
	1900	40.0	1.40	38.43	1.437	-3.93%	2.64%		
	1910	40.0	1.40	38.41	1.443	-3.98%	3.07%		
2450MHz	2410	39.3	1.76	39.21	1.763	-0.23%	0.17%	22.0°C	2021-09-04
	2435	39.2	1.79	39.20	1.781	0.00%	-0.50%		
	2450	39.2	1.80	39.18	1.792	-0.05%	-0.44%		
	2460	39.2	1.81	39.17	1.800	-0.08%	-0.55%		
2600MHz	2510	39.1	1.87	38.52	1.919	-1.48%	2.62%	22.5°C	2021-08-25
	2535	39.1	1.89	38.20	1.930	-2.30%	2.12%		
	2560	39.1	1.92	38.20	1.965	-2.30%	2.34%		
	2600	39.0	1.96	37.80	1.957	-3.08%	-0.15%		
	2610	39.0	1.97	39.19	1.991	0.49%	1.07%		
	2645	39.0	2.01	38.08	2.036	-2.36%	1.29%		
5GHz	5250	35.9	4.71	34.70	4.532	-3.34%	-3.78%	22.0°C	2021-09-27
	5600	35.5	5.07	34.11	4.911	-3.92%	-3.14%		
	5750	35.4	5.22	33.86	5.075	-4.35%	-2.78%		

Table 6: Dielectric Performance of Head Tissue Simulating Liquid

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) KDB865664 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. The SAR test plots may slightly differ from the table above since the DASY rounds to three significant digits.

4.2 System Check

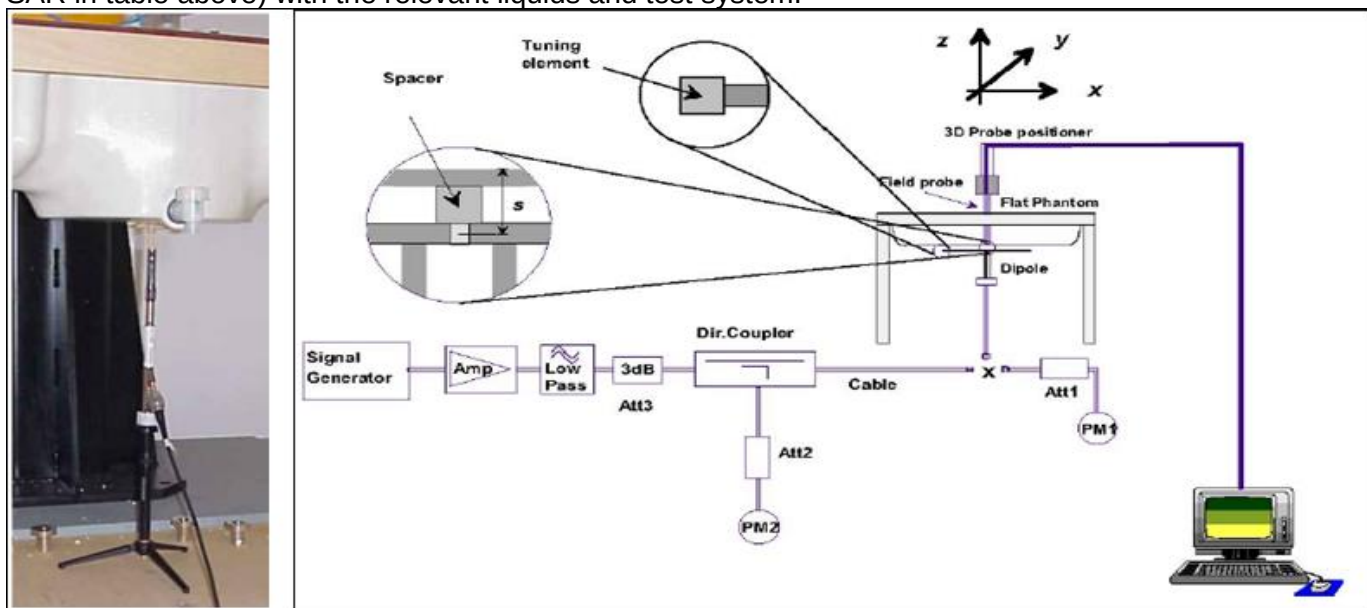
The system check is performed for verifying the accuracy of the complete measurement system and performance of the software. The system check is performed with tissue equivalent material according to IEEE 1528 (described above). The following table shows system check results for all frequency bands and tissue liquids used during the tests (Graphic Plot(s) see Appendix A).

Remark (Dipole SN)	System Check	Target SAR (Normalized to 1W)		Measured SAR (Normalized to 1W)		Deviation (Within +/-10%)		Test Date
		1-g (mW/g)	10-g (mW/g)	1-g (mW/g)	10-g (mW/g)	Δ 1-g	Δ 10-g	
1044	750MHz	8.64	5.66	8.80	5.80	1.85%	2.47%	2021-09-04
4d166	835MHz	9.49	6.25	9.88	6.44	4.11%	3.04%	2021-09-03
4d166	835MHz	9.49	6.25	10.08	6.48	6.22%	3.68%	2021-09-06
1123	1750MHz	36.20	19.00	33.96	18.16	-6.19%	-4.42%	2021-08-23
1123	1750MHz	36.20	19.00	33.72	18.04	-6.85%	-5.05%	2021-08-28
5d143	1900MHz	39.40	20.60	42.00	21.96	6.60%	6.60%	2021-09-01
860	2450MHz	53.10	24.70	53.60	25.52	0.94%	3.32%	2021-09-04
1077	2600MHz	55.30	24.30	52.00	23.68	-5.97%	-2.55%	2021-08-25
1155	5250MHz	79.60	22.90	82.00	23.80	3.02%	3.93%	2021-09-27
1155	5600MHz	82.20	23.40	85.60	24.90	4.14%	6.41%	2021-09-27
1155	5750MHz	80.80	23.00	83.50	24.20	3.34%	5.22%	2021-09-27

Table 7: System Check Results

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 SAM. 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.



5 SAR measurement variability and uncertainty

5.1 SAR measurement variability

Per KDB865664 D01 SAR measurement 100 MHz to 6 GHz, 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 the following section.

5.2 SAR measurement uncertainty

Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz, 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.

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).

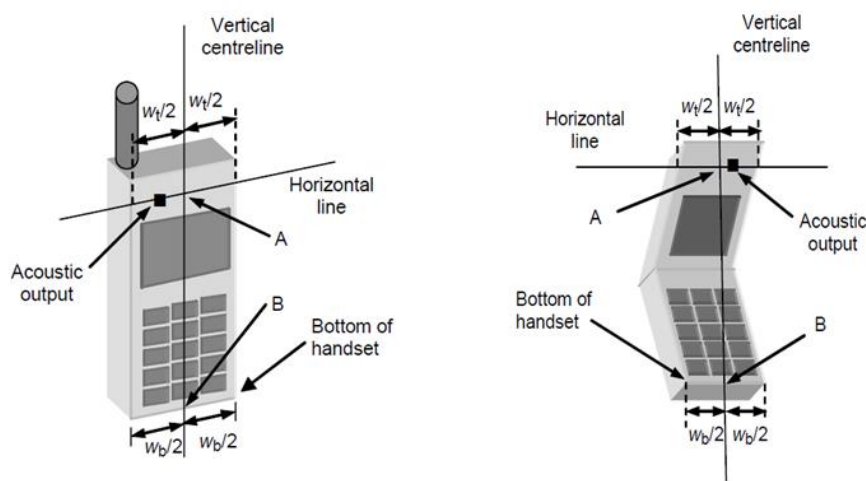


Figure 1 Hand Vertical Center & Horizontal Line Reference Points

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.

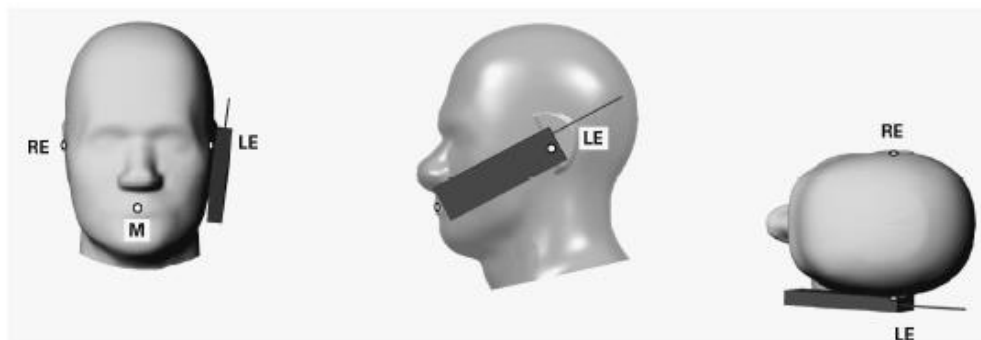


Figure 2 Front, Side and Top View of Cheek Position



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 D04, 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 KDB447498 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 $> 1.2 \text{ W/kg}$, 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.

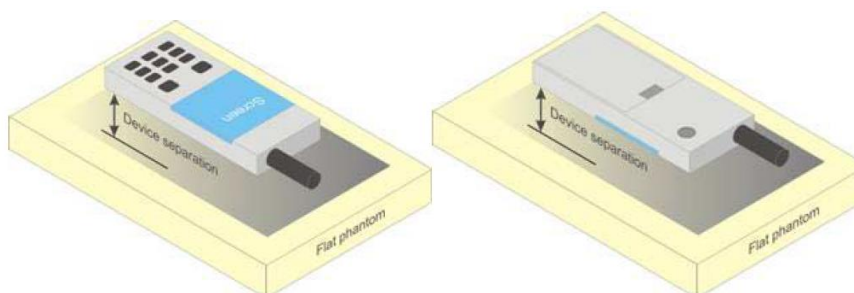


Figure 4 Test position for Body-Worn device

6.1.4 Hotspot Exposure Condition

Per FCC KDB941225 D06, 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 $> 9 \text{ cm} \times 5 \text{ cm}$, 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.

6.1.5 Product Specific 10-g SAR Exposure Condition

Per FCC KDB648474 D04, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, the device is marketed as “Phablet”.

The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for Product Specific 10-g SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.

6.2 3G SAR Test Reduction Procedure

Per KDB941225 D01, 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 $\leq \frac{1}{4}$ 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. The power lever is set to “5” and “0” in SAR of GSM850 and GSM1900 using a Radio Communication Tester. 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.

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 required 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 $\leq \frac{1}{4}$ 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 D01, 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 , $\Delta NACK$, $\Delta CQI = 8$. The variation of the β_c / β_d ratio causes a power reduction at sub-tests 2 - 4.

Sub-test [↗]	β_c [↗]	β_d [↗]	β_d (SF) [↗]	β_c/β_d [↗]	$\beta_{hs}(1)$ [↗]	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 , $\Delta NACK$ and $\Delta CQI = 8$ $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$ 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 $\beta_d = 15/15$ [↗]							

Table 8: 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 9: 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 10: HSDPA UE category

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 $\leq \frac{1}{4}$ 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 D01, 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 ¹	β_c ²	β_d ²	β_d (SF) ²	β_c/β_d ²	β_{hs} ⁽¹⁾ ²	β_{ec} ²	β_{ed} ²	β_c ² (SF) ²	β_{ed} ² (code) ²	CM ⁽²⁾ ² (dB) ²	MP R ² (dB) ²	AG ⁽⁴⁾ ² Index ²	E-TFC I ²
1 ²	11/15 ⁽³⁾ ²	15/15 ⁽³⁾ ²	64 ²	11/15 ⁽³⁾ ²	22/15 ²	209/225 ²	1039/225 ²	4 ²	1 ²	1.0 ²	0.0 ²	20 ²	75 ²
2 ²	6/15 ²	15/15 ²	64 ²	6/15 ²	12/15 ²	12/15 ²	94/75 ²	4 ²	1 ²	3.0 ²	2.0 ²	12 ²	67 ²
3 ²	15/15 ²	9/15 ²	64 ²	15/9 ²	30/15 ²	30/15 ²	$\beta_{ed1}:47/15$ ² $\beta_{ed2}:47/15$ ²	4 ²	2 ²	2.0 ²	1.0 ²	15 ²	92 ²
4 ²	2/15 ²	15/15 ²	64 ²	2/15 ²	4/15 ²	2/15 ²	56/75 ²	4 ²	1 ²	3.0 ²	2.0 ²	17 ²	71 ²
5 ²	15/15 ⁽⁴⁾ ²	15/15 ⁽⁴⁾ ²	64 ²	15/15 ⁽⁴⁾ ²	30/15 ²	24/15 ²	134/15 ²	4 ²	1 ²	1.0 ²	0.0 ²	21 ²	81 ²

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 difference²

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 $\beta_d = 15/15$ ²

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 $\beta_d = 15/15$ ²

Note 5 : Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g²

Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.²

Table 11: Subtests for UMTS Release 6 HSUPA

UE E-DCH Category	Maximum E-DCH Codes Transmitted	Number of HARQ Processes	E-DCH TTI(ms)	Minimum Spreading 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&2SF	11484	5.76
	4	4	2	4	20000	2.00
7 (No DPDCH)	4	8	2	2SF2&2SF	22996	?
	4	4	10	4	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 12: 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/lor	dB	-10
P-CCPCH and SCH_Ec/lor	dB	-12
PICH_Ec/lor	dB	-15
HS-PDSCH	dB	off
HS-SCCH_1	dB	off
DPCH_Ec/lor	dB	-5
OCNS_Ec/lor	dB	-3.1

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

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 13: 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.

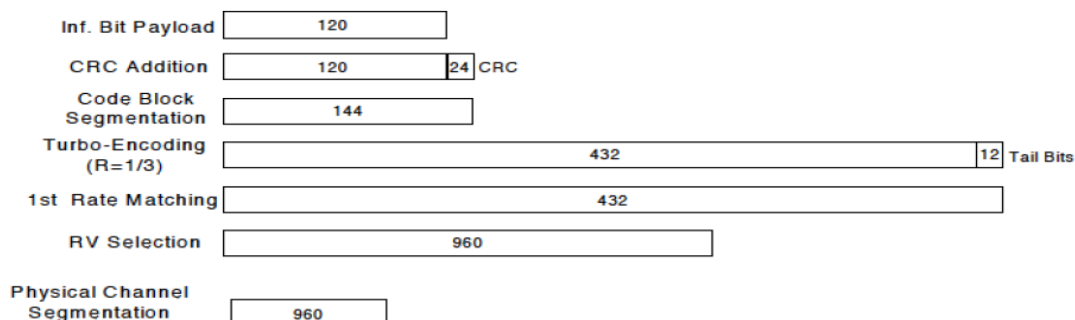


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

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

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.

6.5 LTE Test Configuration

SAR for LTE band exposure configurations is measured according to the procedures of KDB941225 D05 SAR for LTE Devices. The 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.

Modulation	Channel bandwidth / Transmission bandwidth (N_{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
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3

3) A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by using Network Signaling 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.

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 $> \frac{1}{2}$ 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 $> \frac{1}{2}$ 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.

5) TDD LTE test configuration

According to KDB941225 D05 SAR for LTE Devices, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

TDD LTE Band 41 supports 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

Figure 4.2-1: Frame structure type 2

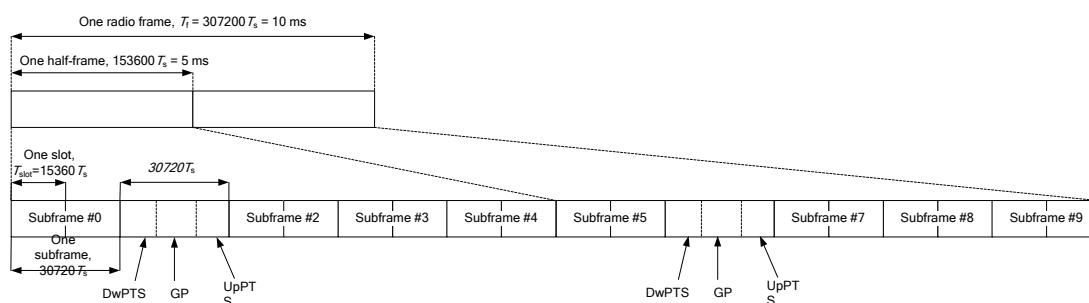


Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS)

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

Table 4.2-2: Uplink-downlink configurations

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

According to Figure 4.2-1, one radio frame is configured by 10 subframes, which consist of Uplink-subframe, Downlink-subframe and Special subframe. For TDD-LTE, the Duty Cycle should be calculated on Uplink-subframes and Special subframes, due to Special subframe containing both Uplink transmissions. So for one radio frame, Duty Cycle can be calculated with formula as below. The count of Uplink subframes are according to Table 4.2-2:

$$\text{Duty cycle} = (30720T_s \cdot \text{Ups} + \text{Uplink Component} \cdot \text{Specials}) / (307200T_s)$$

About the uplink component of Special subframes, we can figure out by Table 4.2-1:

$$\text{Uplink Component} = \text{UpPTS}$$

In conclusion, for the TDD LTE Band, Duty Cycle can be calculated with formula as below .all these sets are ok when we test, or we can set as below.

$$\text{Duty cycle} = [(30720T_s \cdot \text{Ups}) + \text{UpPTS} \cdot \text{Specials}] / (307200T_s)$$

And we can get different Duty cycles under different configurations:

Uplink-Downlink configuration	Subframe number			Configuration of special subframe							
				Normal cyclice prefix in downlink				Extended cyclice prefix in downlink			
				Normal cyclice prefix in uplink		Extended cyclice prefix in uplink		Normal cyclice prefix in uplink		Extended cyclice prefix in uplink	
	D	S	U	configuration 0~4	configuration 5~9	configuration 0~4	configuration 5~9	configuration 0~3	configuration 4~7	configuration 0~3	configuration 4~7
0	2	2	6	61.43%	62.85%	61.67%	63.33%	61.43%	62.85%	61.67%	63.33%
1	4	2	4	41.43%	42.85%	41.67%	43.33%	41.43%	42.85%	41.67%	43.33%
2	6	2	2	21.43%	22.85%	21.67%	23.33%	21.43%	22.85%	21.67%	23.33%
3	6	1	3	30.71%	31.43%	30.83%	31.67%	30.71%	31.43%	30.83%	31.67%
4	7	1	2	20.71%	21.43%	20.83%	21.67%	20.71%	21.43%	20.83%	21.67%
5	8	1	1	10.71%	11.43%	10.83%	11.67%	10.71%	11.43%	10.83%	11.67%
6	3	2	5	51.43%	52.85%	51.67%	53.33%	51.43%	52.85%	51.67%	53.33%

For TDD LTE, SAR should be tested with the highest transmission duty factor (63.33%) using Uplink-downlink configuration 0 and Special subframe configuration 7 for Frame structure type 2.

6.6 LTE CA Specification

6.6.1 LTE CA combinations specification

The device supports downlink and uplink LTE Carrier Aggregation (CA) for Intra-band and inter-band.

a) The LTE release and version numbers of the 3GPP documents used to implement the specific device(s): Release 13, 3GPP TS 36.211 V13.3.0 (2016-09)

b) The associated 3GPP release and version numbers required for power measurements and RF test setup conditions:

Release 15, 3GPP TS 36.521-1 V15.3.0 (2018-09)

Release 15, 3GPP TS 36.101 V15.4.0 (2018-09)

The device supports downlink Rel. 13 LTE carrier aggregation.

1) The device supports Intra-band uplink LTE CA for CA_7C,CA_38C,CA_41C with two component carriers in the uplink.

2) The device supports Intra-band and inter-band downlink LTE CA

3) The device does not support full CA features on 3GPP Release 13 nor Release 14. All other uplink communications are identical to the release 8 specifications. Other LTE Rel.10 or higher features are not supported, including Enhanced SC-FDMA, Uplink MIMO or other antenna diversity configurations, Wi-Fi offloading using LTE-U, LAA or LWA related protocols etc.

6.6.2 Test procedure for downlink CA

The device supports Intra-band and inter-band downlink LTE CA.

According to 201804 FCC RF Exposure TCB workshop slides, the guidance does not consider Intra-band DL CA and inter-band DL CA separately.

In applying the power measurement procedures of KDB 941225 D05A for DL CA SAR test exclusion, only the CA configuration with the largest aggregated DL CA bandwidth in each frequency band group need consideration (independently for contiguous and non-contiguous CA). When the same frequency band is used for both contiguous and non-contiguous CA, power may be measured using the configuration with the largest aggregated bandwidth “and” maximum output power among the contiguous and non-contiguous CA configurations, otherwise, these are considered separately. In applying the existing power measurement procedures of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of frequency bands and CCs in each row need consideration. the configurations that require power measurements are in the table as below:

Index	2CCs	Restriction	Covered by	Index	3CCs	Restriction	Covered by
2CCs#1	CA_7C		3CCs#1	3CCs#1	CA_4A-7C		No
2CCs#2	CA_38C		No	3CCs#2	CA_5A-7C		No
2CCs#3	CA_41C		No				
2CCs#4	CA_2A-4A		No				
2CCs#5	CA_2A-5A		No				
2CCs#6	CA_2A-7A		No				
2CCs#7	CA_4A-5A		No				
2CCs#8	CA_4A-7A		No				
2CCs#9	CA_5A-7A		No				

Refer to appendix for detailed DL CA conducted power measurement results

6.6.3 Test procedure for Intra-band uplink CA

The device supports Intra-band uplink LTE CA for CA_7C,CA_38C,CA_41C with two component carriers in the uplink. (See the table below)

Intra-band contiguous CA operating bands

E-UTRA CA configuration / Bandwidth combination set							
E-UTRA CA configuration	Uplink CA configurations (NOTE 3)	Component carriers in order of increasing carrier frequency				Maximum aggregated bandwidth [MHz]	Bandwidth combination set
		Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]		
CA_7C	CA_7C	15	15			40	0
		20	20				
		10	20				
		15	15, 20			40	1
		20	10, 15, 20				
		15	10, 15				
CA_38C	CA_38C	20	15, 20			40	2
		15	15			40	0
CA_41C	CA_41C	20	20				
		10	20				
		15	15, 20			40	0
		20	10, 15, 20				
		5, 10	20				
		15	15, 20			40	1
		20	5, 10, 15, 20				
		10	15, 20				
		15	10, 15, 20			40	2
		20	10, 15, 20				

		10	20			40	3
		20	20				
NOTE 1: The CA configuration refers to an operating band and a CA bandwidth class specified. Absence of a CA bandwidth class for an operating band implies support of all classes. NOTE 2: For the supported CC bandwidth combinations, the CC downlink and uplink bandwidths are equal. NOTE 3: Uplink CA configurations are the configurations supported by the present release of specifications.							

For Intra-band uplink LTE CA measurement (Uplink CA_7C, CA_38C, CA_41C), the following procedure according to 201711 FCC RF Exposure TCB workshop slides is applied:

- 1) Maximum output power is measured for each UL CA configuration for the required test channels described in KDB 941225 D05 (Rel. 8).
 - UL PCC configuration is determined by the required test channel.
 - SCC and subsequent CCs are added alternatively to either side of the PCC or within the transmission band for channels at the ends of a frequency band.
- 2) SAR for UL CA is required in each exposure condition and frequency band combination.
- 3) For this device, as the maximum output for Intra-band uplink LTE CA (Uplink CA_7C, CA_38C, CA_41C) is $\leq$ standalone LTE mode (without CA).
 - PCC is configured according to the highest standalone SAR configuration tested.
 - SCC and subsequent CCs are configured according to procedures used for power measurement and parameters (BW, RB etc.) similar to that used for the PCC according to the max tune-up power.
- 4) When the reported SAR for UL CA configuration, described above, is > 1.2 W/kg, UL CA SAR is also required for all required test channels(PCC based).
- 5) UL CA SAR is also required for standalone SAR configurations > 1.2 W/kg when they are scaled to the UL CA power level.

Refer to the appendix for detailed UL CA conducted power measurement results.

6.7 Wi-Fi Test Configuration

For Wi-Fi SAR testing, a communication link is set up with the testing software for Wi-Fi mode test. During the test, at the each test frequency channel, the EUT is operated at the RF continuous emission mode. Per KDB248227 D01, a minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

6.7.1 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 $\leq 0.4 \text{ W/kg}$, 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 $\leq 0.8 \text{ W/kg}$ 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 $> 0.8 \text{ W/kg}$, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the *reported* SAR is $\leq 1.2 \text{ W/kg}$ or all required channels are tested.

6.7.2 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 KDB248227 D01). 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 $> 0.8 \text{ W/kg}$, SAR measurement is required for the subsequent next highest measured output power channel(s) in the initial test configuration until the *reported* SAR is $\leq 1.2 \text{ W/kg}$ or all required channels are tested.

6.7.3 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.

6.7.4 2.4G Wi-Fi 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 KDB248227 D01) 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 KDB248227 D01). 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.

C) SAR Test Requirements for OFDM configurations

When SAR measurement is required for 802.11 a/g/n/ac OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. When the same transmitter and antenna(s) are used for U-NII-1 and U-NII-2A bands, additional SAR test reduction applies. When band gap channels between U-NII-2C band and 5.8 GHz U-NII-3 or §15.247 band are supported, the highest maximum output power transmission mode configuration and maximum output power channel across the bands must be used to determine SAR test reduction, according to the initial test configuration and subsequent test configuration requirements. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.

6.7.5 U-NII-1 and U-NII-2A Bands

For devices that operate in only one of the U-NII-1 and U-NII-2A bands, the normally required SAR procedures for OFDM configurations are applied. For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following:

- 1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest *reported* SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, both bands are tested independently for SAR.
- 2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest *reported* SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, both bands are tested independently for SAR.
- 3) The two U-NII bands may be aggregated to support a 160 MHz channel on channel number 50. Without additional testing, the maximum output power for this is limited to the lower of the maximum output power certified for the two bands. When SAR measurement is required for at least one of the bands and the highest *reported* SAR adjusted by the ratio of specified maximum output power of aggregated to standalone band is > 1.2 W/kg, SAR is required for the 160 MHz channel. This procedure does not apply to an aggregated band with maximum output higher than the standalone band(s); the aggregated band must be tested independently for SAR. SAR is not required when the 160 MHz channel is operating at a reduced maximum power and also qualifies for SAR test exclusion.

6.7.6 U-NII-2C and U-NII-3 Bands

The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, the channels at 5.60 – 5.65 GHz in U-NII-2C band must be disabled with acceptable mechanisms and documented in the equipment certification to avoid SAR requirements. TDWR restriction does not apply under the new rules; all channels that operate at 5.60 – 5.65 GHz must be included to apply the SAR test reduction and measurement procedures.

When the same transmitter and antenna(s) are used for U-NII-2C band and U-NII-3 band or 5.8 GHz band of §15.247, the bands may be aggregated to enable additional channels with 20, 40 or 80 MHz bandwidth to span across the band gap, as illustrated in Appendix B. The maximum output power for the additional band gap channels is limited to the lower of those certified for the bands. Unless band gap channels are permanently disabled, they must be considered for SAR testing. The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. To maintain SAR measurement accuracy and to facilitate test reduction, the channels in U-NII-2C band above 5.65 GHz may be grouped with the 5.8 GHz channels in U-NII-3 or §15.247 band to enable two SAR probe calibration frequency points to cover the bands, including the band gap channels.¹¹ When band gap channels are supported and the bands are not aggregated for SAR testing, band gap channels must be considered independently in each band according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

6.7.7 OFDM Transmission Mode SAR Test Channel Selection Requirements

For 2.4 GHz and 5 GHz bands, When the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate. When the maximum output power of a channel is the same for equivalent OFDM configurations (for example 802.11a, 802.11n and 802.11ac and 802.11ax, or 802.11g and 802.11n, with the same channel bandwidth, modulation, and data rate, etc), the lower order 802.11 mode (i.e., 802.11a is chosen over 802.11n then 802.11ac and 802.11ax, or 802.11g is chosen over 802.11n) is used for SAR measurement. When the maximum output power are the same for multiple test channel, either according to the default or additional power measurement requirement, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

6.7.8 MIMO SAR Considerations

Per KDB248227 D01, simultaneous transmission provisions in KDB Publication 447498 should be used to determine simultaneous transmission SAR test exclusion for Wi-Fi MIMO. If the sum of 1-g SAR single transmission SAR measurement is $<1.6\text{W/kg}$, no additional SAR measurements for MIMO are required. Alternatively, SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation.

6.8 Dynamic antenna switching specification

The device supports the dynamic antenna switching function to optimize transmission efficiency for wide range frequency operations.

- 1) For 2G/3G/4G, the device has two 2G/3G/4G Tx antennas (Main Antenna and Secondary Antenna). It can transmit from either Main Antenna or Secondary Antenna. The Main Antenna and Second Antenna cannot transmit simultaneously (Refer to the antenna location picture appendix for details).

Note: The main and second ant support all 2G/3G/4G bands.

SAR test procedure for dynamic antenna switching is as below:

Each antennas are set to the MAX transmit power level respectively and test the SAR respectively in all applicable RF exposure conditions. Some commands or test scripts are supplied to fix the operation state so that only one TX antenna is chosen and tested at a time. All independent antennas are completely covered by the appropriate SAR measurements. The simultaneous transmission scenarios are also evaluated independently.

6.9 Power Reduction Specification

This device uses the following power reduction features to reduce the transmit power and ensure SAR compliance. These power reduction features are implemented using a single fixed level of reduction through static table look-up for some wireless operating modes or frequency bands and triggered by a single event or operation. The published RF exposure KDB procedures are applicable to the specific implementation and applied for testing. So PAG is not required for these features.

- 1) A fixed level power reduction is applied for some antennas and frequency bands when hotspot mode becomes active. When the hotspot is disabled, the power value will be recovered.
- 2) A fixed level power reduction is applied for some antennas and frequency bands when two or more wireless modes transmit simultaneously.
- 3) This device uses the receiver to indicate whether the user is making a voice call in head scenario or not. The selection between head and body power levels is based on the receiver detection mechanism. A fixed level power reduction is applied for some antennas and frequency bands when the audio receiver is on.
- 4) This device uses the mobile country code (MCC) detection mechanism to indicate whether the users in CE countries and FCC countries in the following bands. The selection between different power levels is based on the country code detection mechanism. It can determine the countries where users are and set the relevant power level for each antenna accordingly.

Band/Antenna	MCC OF CE COUNTRY (CE standard)	MCC OF FCC COUNTRY (FCC standard)
LTE Band 7 (Second ant.)	Power Level A1	Power Level B1
LTE Band 38 (Second ant.)	Power Level A2	Power Level B2
LTE Band 41 (Second ant.)	Power Level A3	Power Level B3
2.4G Wi-Fi Ant 1	Power Level A4	Power Level B4
2.4G Wi-Fi Ant 2	Power Level A6	Power Level B6
5G Wi-Fi Ant 1	Power Level A7	Power Level B7
5G Wi-Fi Ant 2	Power Level A8	Power Level B8

Note: In this test report , SAR test should be evaluated at the power level of FCC mobile country code for each exposure conditions.

6.9.1 Power Reduction Specification of 2G&3G&4G Second Antenna

The following tables summarize the key power reduction information of 2G/3G/4G second antenna triggered by specific use conditions. The detailed full power and reduced conducted power measurement results are provided in the report appendixs:

2G/3G/4G Second Antenna Max Power (dBm)					
Band	Second Antenna only		Second Antenna+ Wi-Fi/Hotspot	Second Antenna+ BT on	
	Receiver on	Receiver off	/	Receiver on	Receiver off
GSM850	33.70	33.70	33.70	33.70	33.70
GSM1900	26.40	29.40	25.40	26.40	29.40
UMTS Band II	16.90	21.40	16.90	16.90	21.40
UMTS Band IV	19.40	20.40	19.40	19.40	20.40
LTE Band 2	16.80	21.30	16.80	16.80	21.30
LTE Band 4	19.40	20.40	19.40	19.40	20.40
LTE Band 7	15.70	21.20	15.70	15.70	21.20
LTE Band 38	18.20	23.70	18.20	18.20	23.70
LTE Band 41	18.20	23.70	18.20	18.20	23.70
LTE Band 66	19.40	20.40	19.40	19.40	20.40

6.9.2 Power Reduction Specification of 2G&3G&4G Main antenna

The following tables summarize the key power reduction information of 2G/3G/4G Main antenna triggered by specific use conditions. The detailed full power and reduced conducted power measurement results are provided in the report appendixs:

2G/3G/4G Main Antenna Max Power (dBm)					
Band	Main Antenna only		Main Antenna+ Wi-Fi/Hotspot	Main Antenna+ BT on	
	Receiver on	Receiver off	/	Receiver on	Receiver off
GSM1900	30.50	30.50	29.50	30.50	30.50
UMTS Band II	24.20	22.50	21.50	24.20	22.50
UMTS Band IV	24.50	22.50	22.00	24.50	22.50
LTE Band 2	24.20	22.50	22.00	24.20	22.50
LTE Band 4	24.50	22.50	22.00	24.50	22.50
LTE Band 7	24.00	22.00	20.00	22.00	22.00
LTE Band 38	25.00	24.00	22.00	24.00	24.00
LTE Band 41	24.50	24.00	22.00	24.00	24.00
LTE Band 66	24.50	22.50	22.00	24.50	22.50

Note: For Head SAR test of 2G/3G/4G Antenna, standalone Head SAR should be evaluated with audio receiver on. The audio receiver only works in voice mode when the user is making a call in head scenario, lacking of the third-party VoIP server and the unstandardized VOIP operating characteristic, therefore, a test script tool is used to trigger the receiver on during the test. The test script is only used to trigger audio receiver on and simulate voice and VOIP usage scene. It can be ensured that the unmodified settings in production units, including maximum output power, amplifier gain and other RF performance or tuning parameters, are used for SAR measurement.

6.9.3 Power Reduction Specification of Wi-Fi antennas

The following tables summarize the key power reduction information of Wi-Fi antennas.

Configuration			Tune-up(dBm)			
Band	Ant	Mode	MCC of CE Countries		MCC of FCC Countries	
			Receiver on	Receiver off	Receiver on	Receiver off
2.4G Wi-Fi	Core0	802.11b	18.50	18.50	15.50	18.50
		802.11g	18.00	18.00	14.50	18.00
		802.11n	18.50	18.50	15.50	16.50
		802.11ax	18.00	18.00	15.40	17.90
	Core1	802.11b	18.50	18.50	15.50	18.50
		802.11g	18.00	18.00	14.50	18.00
		802.11n	18.50	18.50	15.50	16.50
		802.11ax	18.00	18.00	15.40	17.90
5G Wi-Fi	Core0	802.11a	17.00	17.00	13.00	16.00
		802.11n	17.00	17.00	13.00	16.00
		802.11ac	17.00	17.00	13.00	15.90
		802.11ax	16.90	16.90	12.90	15.90
	Core1	802.11a	17.00	17.00	13.00	16.00
		802.11n	17.00	17.00	13.00	16.00
		802.11ac	17.00	17.00	13.00	15.90
		802.11ax	16.90	16.90	12.90	15.90

Note: In this test report, SAR test should be evaluated at the power level of FCC mobile country code for each exposure conditions. The detailed full power and reduced conducted power measurement results and country code (MCC) validation results are provided in report appendixs.

6.9.4 BT Test Configuration

For BT SAR testing, there is set to the DUT continuous transmitting with maximum output power using the WideBand Radio Communication Tester CMW500. Per TCB Worksop Notes, the BT SAR was scaled to the 100% transmission DutyCycle to determine compliance. Refer to the following section for the time-domain plot and calculation for the duty cylce of the device.

7 SAR Measurement Results

7.1 Conducted power measurements

The conducted power measurement results are provided in the report appendixs.

7.2 SAR measurement Results

General Notes:

1) Per KDB 447498 D01, all SAR measurement results are scaled to the maximum tune-up tolerance limit to demonstrate SAR compliance.

2) Per KDB 447498 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:

- $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
- $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
- $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.

When the maximum output power variation across the required test channels is $> \frac{1}{2}\text{ dB}$, instead of the middle channel, the highest output power channel must be used.

3) Per KDB 865664 D01, for each frequency band, repeated SAR measurement is required only when the measured SAR is $\geq 0.8\text{W/kg}$; if the deviation among the repeated measurement is $\leq 20\%$, and the measured SAR $< 1.45\text{W/kg}$, only one repeated measurement is required.

4) Per KDB 941225 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 KDB 648474 D04, SAR is evaluated without a headset connected to the device. When the standalone reported body-worn SAR is $\leq 1.2\text{ W/kg}$, no additional SAR evaluations using a headset are required.

6) Per KDB 865664 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 $> 1.5\text{ W/kg}$, or $> 7.0\text{ W/kg}$ 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 648474 D04, Body-worn accessories that do not contain metallic or conductive components is tested according to worst-case exposure configurations, typically according to the smallest test separation distance required for the group of body-worn accessories with similar operating and exposure characteristics.

8) Per KDB 648474 D04, Phones with built-in NFC functions do not require separate SAR testing and can generally be tested according to the SAR measurement procedures normally required for the phone. Influences of the hardware introduced by the built-in NFC functions are inherently considered through testing of the other transmitters that require SAR evaluation.

9) The 2G/3G/4G bands support two SIM card slots. Full SAR test is performed with SIM card slot 1. The highest reported SAR configuration for each Tx antenna and applicable exposure condition should be repeated with SIM card slot 2.

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 KDB 648474 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 KDB 941225 D01, When the maximum output power and tune-up tolerance specified for production units in a Second mode is $\leq \frac{1}{4}$ 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 KDB 941225 D05 SAR for LTE Devices. The general test procedures used for SAR testing can be found in Section 6.
- 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)
- 3) According to KDB 941225 D05 SAR for LTE Devices, for Time-Division Duplex (TDD) systems, SAR is tested using a fixed periodic duty factor according to the highest transmission duty factor (63.33%) implemented for the device and supported by the defined 3GPP LTE TDD configurations.

Wi-Fi Notes:

Wi-Fi was configured to transmit maximum averaged power level and max duty cycle for each antenna and operation mode to be tested. If the actual duty cycle is $< 100\%$, the SAR test results should be scaled to 100% duty cycle to ensure SAR compliance.

BT Notes:

BT was configured to transmit maximum averaged power level and max duty cycle for each operation mode to be tested. If the actual duty cycle is $< 100\%$, the SAR test results should be scaled to 100% duty cycle to ensure SAR compliance.

7.2.1 SAR measurement Results of GSM850

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Left cheek	/	190/836.6	GSM	0.044	0.029	31.86	33.70	0.067	Battery 1#	/
Second	Left tilt	/	190/836.6	GSM	0.001	0.001	31.86	33.70	0.002	Battery 1#	/
Second	Right cheek	/	190/836.6	GSM	0.075	0.045	31.86	33.70	0.115	Battery 1#	/
Second	Right tilt	/	190/836.6	GSM	0.001	0.001	31.86	33.70	0.002	Battery 1#	/
Second	Right cheek	/	190/836.6	GSM	0.079	0.047	31.86	33.70	0.120	Battery 2#	/
Second	Right cheek	/	190/836.6	GSM	0.076	0.045	31.86	33.70	0.116	With SIM2	/
Main	Left cheek	/	190/836.6	GSM	0.118	0.084	31.88	33.50	0.171	Battery 1#	/
Main	Left tilt	/	190/836.6	GSM	0.079	0.058	31.88	33.50	0.115	Battery 1#	/
Main	Right cheek	/	190/836.6	GSM	0.113	0.058	31.88	33.50	0.164	Battery 1#	/
Main	Right tilt	/	190/836.6	GSM	0.077	0.082	31.88	33.50	0.112	Battery 1#	/
Main	Left cheek	/	190/836.6	GSM	0.122	0.093	31.88	33.50	0.177	Battery 2#	Plot
Main	Left cheek	/	190/836.6	GSM	0.113	0.080	31.88	33.50	0.164	With SIM2	/

Table 14: Head SAR test results of GSM850

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	15mm	190/836.6	GSM	0.001	0.001	31.86	33.70	0.002	Battery 1#	/
Second	Back side	15mm	190/836.6	GSM	0.001	0.001	31.86	33.70	0.002	Battery 1#	/
Second	Back side	15mm	190/836.6	GSM	0.050	0.031	31.86	33.70	0.076	Battery 2#	/
Second	Back side	15mm	190/836.6	GSM	0.001	0.001	31.86	33.70	0.002	With SIM2	/
Main	Front side	15mm	190/836.6	GSM	0.129	0.087	31.88	33.50	0.187	Battery 1#	/
Main	Back side	15mm	190/836.6	GSM	0.167	0.113	31.88	33.50	0.243	Battery 1#	/
Main	Back side	15mm	190/836.6	GSM	0.202	0.134	31.88	33.50	0.293	Battery 2#	Plot
Main	Back side	15mm	190/836.6	GSM	0.165	0.112	31.88	33.50	0.240	With SIM2	/

Table 15: Body Worn SAR test results of GSM850

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	10mm	190/836.6	GPRS 2TS	0.001	0.001	30.53	32.20	0.001	Battery 1#	/
Second	Back side	10mm	190/836.6	GPRS 2TS	0.091	0.051	30.53	32.20	0.134	Battery 1#	/
Second	Left side	10mm	190/836.6	GPRS 2TS	0.107	0.057	30.53	32.20	0.157	Battery 1#	/
Second	Top side	10mm	190/836.6	GPRS 2TS	0.001	0.001	30.53	32.20	0.001	Battery 1#	/
Second	Left side	10mm	190/836.6	GPRS 2TS	0.100	0.055	30.53	32.20	0.147	Battery 2#	/
Second	Left side	10mm	190/836.6	GPRS 2TS	0.099	0.050	30.53	32.20	0.145	With SIM2	/
Main	Front side	10mm	190/836.6	GPRS 2TS	0.270	0.167	30.97	32.00	0.342	Battery 2#	/
Main	Back side	10mm	190/836.6	GPRS 2TS	0.245	0.164	30.97	32.00	0.311	Battery 1#	/
Main	Right side	10mm	190/836.6	GPRS 2TS	0.121	0.078	30.97	32.00	0.153	Battery 1#	/
Main	Bottom side	10mm	190/836.6	GPRS 2TS	0.179	0.107	30.97	32.00	0.227	Battery 1#	/
Main	Front side	10mm	190/836.6	GPRS 2TS	0.273	0.170	30.97	32.00	0.346	Battery 2#	Plot
Main	Front side	10mm	190/836.6	GPRS 2TS	0.271	0.169	30.97	32.00	0.344	With SIM2	/

Table 16: Hotspot SAR test results of GSM850

Per KDB648474 D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Max Power Without Reduction	Scaled-up 1-g SAR (W/kg)	Product Specific 10-g SAR Exclusion
Second	Front side	10mm	190/836.6	GPRS 2TS	0.001	0.001	30.53	32.20	0.001	Yes
Second	Back side	10mm	190/836.6	GPRS 2TS	0.091	0.051	30.53	32.20	0.134	Yes
Second	Left side	10mm	190/836.6	GPRS 2TS	0.107	0.057	30.53	32.20	0.157	Yes
Second	Top side	10mm	190/836.6	GPRS 2TS	0.001	0.001	30.53	32.20	0.001	Yes
Second	Left side	10mm	190/836.6	GPRS 2TS	0.100	0.055	30.53	32.20	0.147	Yes
Second	Left side	10mm	190/836.6	GPRS 2TS	0.099	0.050	30.53	32.20	0.145	Yes
Main	Front side	10mm	190/836.6	GPRS 2TS	0.270	0.167	30.97	32.00	0.342	Yes
Main	Back side	10mm	190/836.6	GPRS 2TS	0.245	0.164	30.97	32.00	0.311	Yes
Main	Right side	10mm	190/836.6	GPRS 2TS	0.121	0.078	30.97	32.00	0.153	Yes
Main	Bottom side	10mm	190/836.6	GPRS 2TS	0.179	0.107	30.97	32.00	0.227	Yes
Main	Front side	10mm	190/836.6	GPRS 2TS	0.273	0.170	30.97	32.00	0.346	Yes
Main	Front side	10mm	190/836.6	GPRS 2TS	0.271	0.169	30.97	32.00	0.344	Yes

Table 17: Product Specific 10-g SAR test reduction evaluation of GSM850

Note: According to the table above, Product Specific 10-g SAR test is not required for this frequency band.

7.2.2 SAR measurement Results of GSM1900

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Left cheek	/	661/1880	GSM	0.249	0.130	26.20	26.40	0.261	Battery 1#	/
Second	Left tilt	/	661/1880	GSM	0.271	0.141	26.20	26.40	0.284	Battery 1#	/
Second	Right cheek	/	661/1880	GSM	0.373	0.173	26.20	26.40	0.391	Battery 1#	/
Second	Right tilt	/	661/1880	GSM	0.422	0.199	26.20	26.40	0.442	Battery 1#	/
Second	Right tilt	/	661/1880	GSM	0.489	0.221	26.20	26.40	0.512	Battery 2#	Plot
Second	Right tilt	/	661/1880	GSM	0.390	0.187	26.20	26.40	0.408	With SIM2	/
Main	Left cheek	/	661/1880	GSM	0.055	0.034	29.68	30.50	0.066	Battery 1#	/
Main	Left tilt	/	661/1880	GSM	0.046	0.029	29.68	30.50	0.056	Battery 1#	/
Main	Right cheek	/	661/1880	GSM	0.066	0.039	29.68	30.50	0.080	Battery 1#	/
Main	Right tilt	/	661/1880	GSM	0.046	0.028	29.68	30.50	0.056	Battery 1#	/
Main	Right cheek	/	661/1880	GSM	0.070	0.043	29.68	30.50	0.084	Battery 2#	/
Main	Right cheek	/	661/1880	GSM	0.055	0.032	29.68	30.50	0.066	With SIM2	/

Table 18: Head SAR test results of GSM1900

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	15mm	661/1880	GSM	0.073	0.042	28.50	29.40	0.090	Battery 1#	/
Second	Back side	15mm	661/1880	GSM	0.117	0.065	28.50	29.40	0.144	Battery 1#	/
Second	Back side	15mm	661/1880	GSM	0.119	0.063	28.50	29.40	0.146	Battery 2#	/
Second	Back side	15mm	661/1880	GSM	0.108	0.059	28.50	29.40	0.133	With SIM2	/
Main	Front side	15mm	661/1880	GSM	0.122	0.073	29.68	30.50	0.147	Battery 1#	/
Main	Back side	15mm	661/1880	GSM	0.125	0.074	29.68	30.50	0.151	Battery 1#	/
Main	Back side	15mm	661/1880	GSM	0.127	0.075	29.68	30.50	0.153	Battery 2#	Plot
Main	Back side	15mm	661/1880	GSM	0.123	0.073	29.68	30.50	0.149	With SIM2	/

Table 19: Body Worn SAR test results of GSM1900

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	10mm	661/1880	GPRS 2TS	0.087	0.045	22.45	23.90	0.121	Battery 1#	/
Second	Back side	10mm	661/1880	GPRS 2TS	0.135	0.070	22.45	23.90	0.189	Battery 1#	/
Second	Left side	10mm	661/1880	GPRS 2TS	0.001	0.001	22.45	23.90	0.001	Battery 1#	/
Second	Top side	10mm	661/1880	GPRS 2TS	0.162	0.084	22.45	23.90	0.226	Battery 1#	/
Second	Top side	10mm	661/1880	GPRS 2TS	0.185	0.096	22.45	23.90	0.258	Battery 2#	/
Second	Top side	10mm	661/1880	GPRS 2TS	0.142	0.073	22.45	23.90	0.198	With SIM2	/
Main	Front side	10mm	661/1880	GPRS 2TS	0.206	0.120	27.28	28.00	0.243	Battery 1#	/
Main	Back side	10mm	661/1880	GPRS 2TS	0.235	0.131	27.28	28.00	0.277	Battery 1#	/
Main	Left side	10mm	661/1880	GPRS 2TS	0.107	0.059	27.28	28.00	0.126	Battery 1#	/
Main	Bottom side	10mm	661/1880	GPRS 2TS	0.511	0.279	27.28	28.00	0.603	Battery 1#	/
Main	Bottom side	10mm	661/1880	GPRS 2TS	0.513	0.282	27.28	28.00	0.606	Battery 2#	Plot
Main	Bottom side	10mm	661/1880	GPRS 2TS	0.493	0.269	27.28	28.00	0.582	With SIM2	/

Table 20: Hotspot SAR test results of GSM1900

Per KDB648474 D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Max Power Without Reduction	Scaled-up 1-g SAR (W/kg)	Product Specific 10-g SAR Exclusion
Second	Front side	10mm	661/1880	GPRS 2TS	0.087	0.045	22.45	27.90	0.305	Yes
Second	Back side	10mm	661/1880	GPRS 2TS	0.135	0.070	22.45	27.90	0.474	Yes
Second	Left side	10mm	661/1880	GPRS 2TS	0.001	0.001	22.45	27.90	0.004	Yes
Second	Top side	10mm	661/1880	GPRS 2TS	0.162	0.084	22.45	27.90	0.568	Yes
Second	Top side	10mm	661/1880	GPRS 2TS	0.185	0.096	22.45	27.90	0.649	Yes
Second	Top side	10mm	661/1880	GPRS 2TS	0.142	0.073	22.45	27.90	0.498	Yes
Main	Front side	10mm	661/1880	GPRS 2TS	0.206	0.120	27.28	29.00	0.306	Yes
Main	Back side	10mm	661/1880	GPRS 2TS	0.235	0.131	27.28	29.00	0.349	Yes
Main	Left side	10mm	661/1880	GPRS 2TS	0.107	0.059	27.28	29.00	0.159	Yes
Main	Bottom side	10mm	661/1880	GPRS 2TS	0.511	0.279	27.28	29.00	0.759	Yes
Main	Bottom side	10mm	661/1880	GPRS 2TS	0.513	0.282	27.28	29.00	0.762	Yes
Main	Bottom side	10mm	661/1880	GPRS 2TS	0.493	0.269	27.28	29.00	0.733	Yes

Table 21: Product Specific 10-g SAR test reduction evaluation of GSM1900

Note: According to the table above, Product Specific 10-g SAR test is not required for this frequency band.

7.2.3 SAR measurement Results of UMTS Band II

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Left cheek	/	9400/1880	RMC	0.242	0.121	15.99	16.90	0.298	Battery 1#	/
Second	Left tilt	/	9400/1880	RMC	0.296	0.152	15.99	16.90	0.365	Battery 1#	/
Second	Right cheek	/	9400/1880	RMC	0.410	0.195	15.99	16.90	0.506	Battery 1#	/
Second	Right tilt	/	9400/1880	RMC	0.450	0.206	15.99	16.90	0.555	Battery 1#	/
Second	Right tilt	/	9400/1880	RMC	0.475	0.213	15.99	16.90	0.586	Battery 2#	Plot
Second	Right tilt	/	9400/1880	RMC	0.451	0.204	15.99	16.90	0.556	With SIM2	/
Main	Left cheek	/	9400/1880	RMC	0.127	0.077	23.43	24.20	0.152	Battery 1#	/
Main	Left tilt	/	9400/1880	RMC	0.096	0.060	23.43	24.20	0.115	Battery 1#	/
Main	Right cheek	/	9400/1880	RMC	0.138	0.081	23.43	24.20	0.165	Battery 1#	/
Main	Right tilt	/	9400/1880	RMC	0.096	0.058	23.43	24.20	0.115	Battery 1#	/
Main	Right cheek	/	9400/1880	RMC	0.146	0.089	23.43	24.20	0.174	Battery 2#	/
Main	Right cheek	/	9400/1880	RMC	0.124	0.076	23.43	24.20	0.148	With SIM2	/

Table 22: Head SAR test results of UMTS Band II

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	15mm	9400/1880	RMC	0.120	0.066	20.50	21.40	0.148	Battery 1#	/
Second	Back side	15mm	9400/1880	RMC	0.185	0.101	20.50	21.40	0.228	Battery 1#	/
Second	Back side	15mm	9400/1880	RMC	0.193	0.110	20.50	21.40	0.237	Battery 2#	/
Second	Back side	15mm	9400/1880	RMC	0.161	0.090	20.50	21.40	0.198	With SIM2	/
Main	Front side	15mm	9400/1880	RMC	0.201	0.120	21.70	22.50	0.242	Battery 1#	/
Main	Back side	15mm	9400/1880	RMC	0.209	0.124	21.70	22.50	0.251	Battery 1#	/
Main	Back side	15mm	9400/1880	RMC	0.215	0.127	21.70	22.50	0.258	Battery 2#	Plot
Main	Back side	15mm	9400/1880	RMC	0.199	0.120	21.70	22.50	0.239	With SIM2	/

Table 23: Body Worn SAR test results of UMTS Band II

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	10mm	9400/1880	RMC	0.087	0.044	15.99	16.90	0.107	Battery 1#	/
Second	Back side	10mm	9400/1880	RMC	0.140	0.072	15.99	16.90	0.173	Battery 1#	/
Second	Left side	10mm	9400/1880	RMC	0.050	0.015	15.99	16.90	0.062	Battery 1#	/
Second	Top side	10mm	9400/1880	RMC	0.190	0.097	15.99	16.90	0.234	Battery 1#	/
Second	Top side	10mm	9400/1880	RMC	0.150	0.075	15.99	16.90	0.185	Battery 2#	/
Second	Top side	10mm	9400/1880	RMC	0.142	0.071	15.99	16.90	0.175	With SIM2	/
Main	Front side	10mm	9400/1880	RMC	0.256	0.150	20.64	21.50	0.312	Battery 1#	/
Main	Back side	10mm	9400/1880	RMC	0.296	0.169	20.64	21.50	0.361	Battery 1#	/
Main	Left side	10mm	9400/1880	RMC	0.214	0.119	20.64	21.50	0.261	Battery 1#	/
Main	Bottom side	10mm	9400/1880	RMC	0.544	0.291	20.64	21.50	0.663	Battery 1#	/
Main	Bottom side	10mm	9400/1880	RMC	0.573	0.313	20.64	21.50	0.698	Battery 2#	Plot
Main	Bottom side	10mm	9400/1880	RMC	0.528	0.281	20.64	21.50	0.644	With SIM2	/

Table 24: Hotspot SAR test results of UMTS Band II

Per KDB648474 D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Max Power Without Reduction	Scaled-up 1-g SAR (W/kg)	Product Specific 10-g SAR Exclusion
Second	Front side	10mm	9400/1880	RMC	0.087	0.044	15.99	21.40	0.302	Yes
Second	Back side	10mm	9400/1880	RMC	0.140	0.072	15.99	21.40	0.487	Yes
Second	Left side	10mm	9400/1880	RMC	0.050	0.015	15.99	21.40	0.174	Yes
Second	Top side	10mm	9400/1880	RMC	0.190	0.097	15.99	21.40	0.660	Yes
Second	Top side	10mm	9400/1880	RMC	0.150	0.075	15.99	21.40	0.521	Yes
Second	Top side	10mm	9400/1880	RMC	0.142	0.071	15.99	21.40	0.494	Yes
Main	Front side	10mm	9400/1880	RMC	0.256	0.150	20.64	22.50	0.393	Yes
Main	Back side	10mm	9400/1880	RMC	0.296	0.169	20.64	22.50	0.454	Yes
Main	Left side	10mm	9400/1880	RMC	0.214	0.119	20.64	22.50	0.328	Yes
Main	Bottom side	10mm	9400/1880	RMC	0.544	0.291	20.64	22.50	0.835	Yes
Main	Bottom side	10mm	9400/1880	RMC	0.573	0.313	20.64	22.50	0.879	Yes
Main	Bottom side	10mm	9400/1880	RMC	0.528	0.281	20.64	22.50	0.810	Yes

Table 25: Product Specific 10-g SAR test reduction evaluation of UMTS Band II

Note: According to the table above, Product Specific 10-g SAR test is not required for this frequency band.

7.2.4 SAR measurement Results of UMTS Band IV

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Left cheek	/	1413/1732.6	RMC	0.207	0.107	18.75	19.40	0.240	Battery 1#	/
Second	Left tilt	/	1413/1732.6	RMC	0.280	0.145	18.75	19.40	0.325	Battery 1#	/
Second	Right cheek	/	1413/1732.6	RMC	0.346	0.174	18.75	19.40	0.402	Battery 1#	/
Second	Right tilt	/	1413/1732.6	RMC	0.393	0.189	18.75	19.40	0.456	Battery 1#	/
Second	Right tilt	/	1413/1732.6	RMC	0.429	0.194	18.75	19.40	0.498	Battery 2#	Plot
Second	Right tilt	/	1413/1732.6	RMC	0.378	0.181	18.75	19.40	0.439	Battery 2#	/
Second	Right tilt	/	1413/1732.6	RMC	0.418	0.204	18.75	19.40	0.485	Battery 2#	/
Second	Right tilt	/	1413/1732.6	RMC	0.385	0.189	18.75	19.40	0.447	With SIM2	/
Main	Left cheek	/	1413/1732.6	RMC	0.124	0.080	23.96	24.50	0.140	Battery 1#	/
Main	Left tilt	/	1413/1732.6	RMC	0.081	0.051	23.96	24.50	0.092	Battery 1#	/
Main	Right cheek	/	1413/1732.6	RMC	0.139	0.084	23.96	24.50	0.157	Battery 1#	/
Main	Right tilt	/	1413/1732.6	RMC	0.113	0.067	23.96	24.50	0.128	Battery 1#	/
Main	Right cheek	/	1413/1732.6	RMC	0.152	0.095	23.96	24.50	0.172	Battery 2#	/
Main	Right cheek	/	1413/1732.6	RMC	0.136	0.083	23.96	24.50	0.154	With SIM2	/

Table 26: Head SAR test results of UMTS Band IV

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	15mm	1413/1732.6	RMC	0.001	0.001	19.96	20.40	0.001	Battery 1#	/
Second	Back side	15mm	1413/1732.6	RMC	0.052	0.033	19.96	20.40	0.058	Battery 1#	/
Second	Back side	15mm	1413/1732.6	RMC	0.054	0.031	19.96	20.40	0.059	Battery 2#	/
Second	Back side	15mm	1413/1732.6	RMC	0.046	0.026	19.96	20.40	0.051	With SIM2	/
Main	Front side	15mm	1413/1732.6	RMC	0.244	0.156	21.05	22.50	0.341	Battery 1#	/
Main	Back side	15mm	1413/1732.6	RMC	0.388	0.205	21.05	22.50	0.542	Battery 1#	/
Main	Back side	15mm	1413/1732.6	RMC	0.466	0.269	21.05	22.50	0.651	Battery 2#	Plot
Main	Back side	15mm	1413/1732.6	RMC	0.402	0.256	21.05	22.50	0.561	With SIM2	/

Table 27: Body Worn SAR test results of UMTS Band IV

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	10mm	1413/1732.6	RMC	0.062	0.034	18.75	19.40	0.072	Battery 1#	/
Second	Back side	10mm	1413/1732.6	RMC	0.116	0.062	18.75	19.40	0.135	Battery 1#	/
Second	Left side	10mm	1413/1732.6	RMC	0.001	0.001	18.75	19.40	0.001	Battery 1#	/
Second	Top side	10mm	1413/1732.6	RMC	0.129	0.067	18.75	19.40	0.150	Battery 1#	/
Second	Top side	10mm	1413/1732.6	RMC	0.185	0.095	18.75	19.40	0.215	Battery 2#	/
Second	Top side	10mm	1413/1732.6	RMC	0.126	0.065	18.75	19.40	0.146	With SIM2	/
Main	Front side	10mm	1413/1732.6	RMC	0.362	0.218	20.42	22.00	0.521	Battery 1#	/
Main	Back side	10mm	1413/1732.6	RMC	0.434	0.257	20.42	22.00	0.624	Battery 1#	/
Main	Left side	10mm	1413/1732.6	RMC	0.119	0.066	20.42	22.00	0.171	Battery 1#	/
Main	Bottom side	10mm	1413/1732.6	RMC	0.615	0.338	20.42	22.00	0.885	Battery 1#	/
Main	Bottom side	10mm	1413/1732.6	RMC	0.694	0.386	20.42	22.00	0.999	Battery 2#	Plot
Main	Bottom side	10mm	1312/1712.4	RMC	0.682	0.368	20.68	22.00	0.924	Battery 2#	/
Main	Bottom side	10mm	1513/1752.6	RMC	0.620	0.333	20.47	22.00	0.882	Battery 2#	/
Main	Bottom side	10mm	1413/1732.6	RMC	0.629	0.349	20.42	22.00	0.905	With SIM2	/

Table 28: Hotspot SAR test results of UMTS Band IV

Per KDB648474 D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Max Power Without Reduction	Scaled-up 1-g SAR (W/kg)	Product Specific 10-g SAR Exclusion
Second	Front side	10mm	1413/1732.6	RMC	0.062	0.034	18.75	20.40	0.091	Yes
Second	Back side	10mm	1413/1732.6	RMC	0.116	0.062	18.75	20.40	0.170	Yes
Second	Left side	10mm	1413/1732.6	RMC	0.001	0.001	18.75	20.40	0.001	Yes
Second	Top side	10mm	1413/1732.6	RMC	0.129	0.067	18.75	20.40	0.189	Yes
Second	Top side	10mm	1413/1732.6	RMC	0.185	0.095	18.75	20.40	0.271	Yes
Second	Top side	10mm	1413/1732.6	RMC	0.126	0.065	18.75	20.40	0.184	Yes
Main	Front side	10mm	1413/1732.6	RMC	0.362	0.218	20.42	22.50	0.584	Yes
Main	Back side	10mm	1413/1732.6	RMC	0.434	0.257	20.42	22.50	0.701	Yes
Main	Left side	10mm	1413/1732.6	RMC	0.119	0.066	20.42	22.50	0.192	Yes
Main	Bottom side	10mm	1413/1732.6	RMC	0.615	0.338	20.42	22.50	0.993	Yes
Main	Bottom side	10mm	1413/1732.6	RMC	0.694	0.386	20.42	22.50	1.120	Yes
Main	Bottom side	10mm	1312/1712.4	RMC	0.682	0.368	20.68	22.50	1.037	Yes
Main	Bottom side	10mm	1513/1752.6	RMC	0.620	0.333	20.47	22.50	0.989	Yes
Main	Bottom side	10mm	1413/1732.6	RMC	0.629	0.349	20.42	22.50	1.015	Yes

Table 29: Product Specific 10-g SAR test reduction evaluation of UMTS Band IV

Note: According to the table above, Product Specific 10-g SAR test is not required for this frequency band.

7.2.5 SAR measurement Results of UMTS Band V

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Left cheek	/	4182/836.4	RMC	0.083	0.048	23.77	25.50	0.124	Battery 1#	/
Second	Left tilt	/	4182/836.4	RMC	0.001	0.001	23.77	25.50	0.001	Battery 1#	/
Second	Right cheek	/	4182/836.4	RMC	0.099	0.060	23.77	25.50	0.147	Battery 1#	/
Second	Right tilt	/	4182/836.4	RMC	0.042	0.025	23.77	25.50	0.063	Battery 1#	/
Second	Right cheek	/	4182/836.4	RMC	0.111	0.066	23.77	25.50	0.165	Battery 2#	/
Second	Right cheek	/	4182/836.4	RMC	0.082	0.050	23.77	25.50	0.122	With SIM2	/
Main	Left cheek	/	4182/836.4	RMC	0.170	0.128	23.89	25.30	0.235	Battery 1#	/
Main	Left tilt	/	4182/836.4	RMC	0.107	0.078	23.89	25.30	0.148	Battery 1#	/
Main	Right cheek	/	4182/836.4	RMC	0.157	0.114	23.89	25.30	0.217	Battery 1#	/
Main	Right tilt	/	4182/836.4	RMC	0.091	0.067	23.89	25.30	0.126	Battery 1#	/
Main	Left cheek	/	4182/836.4	RMC	0.173	0.131	23.89	25.30	0.239	Battery 2#	Plot
Main	Left cheek	/	4182/836.4	RMC	0.145	0.107	23.89	25.30	0.201	With SIM2	/

Table 30: Head SAR test results of UMTS Band V

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	15mm	4182/836.4	RMC	0.001	0.001	23.77	25.50	0.001	Battery 1#	/
Second	Back side	15mm	4182/836.4	RMC	0.079	0.049	23.77	25.50	0.118	Battery 1#	/
Second	Back side	15mm	4182/836.4	RMC	0.055	0.033	23.77	25.50	0.082	Battery 2#	/
Second	Back side	15mm	4182/836.4	RMC	0.049	0.030	23.77	25.50	0.073	With SIM2	/
Main	Front side	15mm	4182/836.4	RMC	0.197	0.131	23.89	25.30	0.273	Battery 1#	/
Main	Back side	15mm	4182/836.4	RMC	0.226	0.151	23.89	25.30	0.313	Battery 1#	/
Main	Back side	15mm	4182/836.4	RMC	0.244	0.166	23.89	25.30	0.338	Battery 2#	Plot
Main	Back side	15mm	4182/836.4	RMC	0.202	0.137	23.89	25.30	0.279	With SIM2	/

Table 31: Body Worn SAR test results of UMTS Band V

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	10mm	4182/836.4	RMC	0.047	0.027	23.77	25.50	0.070	Battery 1#	/
Second	Back side	10mm	4182/836.4	RMC	0.106	0.061	23.77	25.50	0.158	Battery 1#	/
Second	Left side	10mm	4182/836.4	RMC	0.122	0.066	23.77	25.50	0.182	Battery 1#	/
Second	Top side	10mm	4182/836.4	RMC	0.001	0.001	23.77	25.50	0.001	Battery 1#	/
Second	Left side	10mm	4182/836.4	RMC	0.147	0.081	23.77	25.50	0.219	Battery 2#	/
Second	Left side	10mm	4182/836.4	RMC	0.115	0.061	23.77	25.50	0.171	With SIM2	/
Main	Front side	10mm	4182/836.4	RMC	0.316	0.211	23.89	25.30	0.437	Battery 1#	/
Main	Back side	10mm	4182/836.4	RMC	0.354	0.241	23.89	25.30	0.490	Battery 1#	/
Main	Right side	10mm	4182/836.4	RMC	0.134	0.088	23.89	25.30	0.185	Battery 1#	/
Main	Bottom side	10mm	4182/836.4	RMC	0.214	0.125	23.89	25.30	0.296	Battery 1#	/
Main	Back side	10mm	4182/836.4	RMC	0.365	0.243	23.89	25.30	0.505	Battery 2#	Plot
Main	Back side	10mm	4182/836.4	RMC	0.327	0.215	23.89	25.30	0.452	With SIM2	/

Table 32: Hotspot SAR test results of UMTS Band V

Per KDB648474 D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Max Power Without Reduction	Scaled-up 1-g SAR (W/kg)	Product Specific 10-g SAR Exclusion
Second	Front side	10mm	4182/836.4	RMC	0.047	0.027	23.77	25.5	0.070	Yes
Second	Back side	10mm	4182/836.4	RMC	0.106	0.061	23.77	25.5	0.158	Yes
Second	Left side	10mm	4182/836.4	RMC	0.122	0.066	23.77	25.5	0.182	Yes
Second	Top side	10mm	4182/836.4	RMC	0.001	0.001	23.77	25.5	0.001	Yes
Second	Left side	10mm	4182/836.4	RMC	0.147	0.081	23.77	25.5	0.219	Yes
Second	Left side	10mm	4182/836.4	RMC	0.115	0.061	23.77	25.5	0.171	Yes
Main	Front side	10mm	4182/836.4	RMC	0.316	0.211	23.89	25.3	0.437	Yes
Main	Back side	10mm	4182/836.4	RMC	0.354	0.241	23.89	25.3	0.490	Yes
Main	Right side	10mm	4182/836.4	RMC	0.134	0.088	23.89	25.3	0.185	Yes
Main	Bottom side	10mm	4182/836.4	RMC	0.214	0.125	23.89	25.3	0.296	Yes
Main	Back side	10mm	4182/836.4	RMC	0.365	0.243	23.89	25.3	0.505	Yes
Main	Back side	10mm	4182/836.4	RMC	0.327	0.215	23.89	25.3	0.452	Yes

Table 33: Product Specific 10-g SAR test reduction evaluation of UMTS Band V

Note: According to the table above, Product Specific 10-g SAR test is not required for this frequency band.

7.2.6 SAR measurement Results of LTE Band 2

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Left cheek	/	18900/1880.0	20M QPSK 1RB@50	0.217	0.108	15.45	16.80	0.296	Battery 1#	/
Second	Left tilt	/	18900/1880.0	20M QPSK 1RB@50	0.266	0.136	15.45	16.80	0.363	Battery 1#	/
Second	Right cheek	/	18900/1880.0	20M QPSK 1RB@50	0.360	0.171	15.45	16.80	0.491	Battery 1#	/
Second	Right tilt	/	18900/1880.0	20M QPSK 1RB@50	0.390	0.191	15.45	16.80	0.532	Battery 1#	/
Second	Left cheek	/	18700/1860.0	20M QPSK 50%RB@50	0.202	0.101	15.50	16.80	0.272	Battery 1#	/
Second	Left tilt	/	18700/1860.0	20M QPSK 50%RB@50	0.252	0.129	15.50	16.80	0.340	Battery 1#	/
Second	Right cheek	/	18700/1860.0	20M QPSK 50%RB@50	0.346	0.163	15.50	16.80	0.467	Battery 1#	/
Second	Right tilt	/	18700/1860.0	20M QPSK 50%RB@50	0.389	0.184	15.50	16.80	0.525	Battery 1#	/
Second	Right tilt	/	18900/1880.0	20M QPSK 1RB@50	0.391	0.178	15.45	16.80	0.534	Battery 2#	Plot
Second	Right tilt	/	18900/1880.0	20M QPSK 1RB@50	0.389	0.184	15.45	16.80	0.531	With SIM2	/
Main	Left cheek	/	18700/1860.0	20M QPSK 1RB@99	0.093	0.058	22.82	24.20	0.128	Battery 1#	/
Main	Left tilt	/	18700/1860.0	20M QPSK 1RB@99	0.084	0.051	22.82	24.20	0.115	Battery 1#	/
Main	Right cheek	/	18700/1860.0	20M QPSK 1RB@99	0.127	0.077	22.82	24.20	0.175	Battery 1#	/
Main	Right tilt	/	18700/1860.0	20M QPSK 1RB@99	0.086	0.049	22.82	24.20	0.118	Battery 1#	/
Main	Left cheek	/	18900/1880.0	20M QPSK 50%RB@25	0.087	0.054	21.96	23.20	0.116	Battery 1#	/
Main	Left tilt	/	18900/1880.0	20M QPSK 50%RB@25	0.077	0.047	21.96	23.20	0.102	Battery 1#	/
Main	Right cheek	/	18900/1880.0	20M QPSK 50%RB@25	0.115	0.070	21.96	23.20	0.153	Battery 1#	/
Main	Right tilt	/	18900/1880.0	20M QPSK 50%RB@25	0.072	0.041	21.96	23.20	0.096	Battery 1#	/
Main	Right cheek	/	18700/1860.0	20M QPSK 1RB@99	0.131	0.080	22.82	24.20	0.180	Battery 2#	/
Main	Right cheek	/	18700/1860.0	20M QPSK 1RB@99	0.116	0.068	22.82	24.20	0.159	With SIM2	/

Table 34: Head SAR test results of LTE Band 2

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	15mm	18900/1880.0	20M QPSK 1RB@0	0.081	0.045	19.91	21.30	0.112	Battery 1#	/
Second	Back side	15mm	18900/1880.0	20M QPSK 1RB@0	0.147	0.080	19.91	21.30	0.202	Battery 1#	/
Second	Front side	15mm	18900/1880.0	20M QPSK 50%RB@25	0.091	0.050	20.05	21.30	0.121	Battery 1#	/
Second	Back side	15mm	18900/1880.0	20M QPSK 50%RB@25	0.150	0.081	20.05	21.30	0.200	Battery 1#	/
Second	Back side	15mm	18900/1880.0	20M QPSK 1RB@0	0.165	0.094	19.91	21.30	0.227	Battery 2#	/
Second	Back side	15mm	18900/1880.0	20M QPSK 1RB@0	0.140	0.077	19.91	21.30	0.193	With SIM2	/
Main	Front side	15mm	18900/1880.0	20M QPSK 1RB@50	0.144	0.088	21.18	22.50	0.195	Battery 1#	/
Main	Back side	15mm	18900/1880.0	20M QPSK 1RB@50	0.169	0.104	21.18	22.50	0.229	Battery 1#	/
Main	Front side	15mm	18700/1860.0	20M QPSK 50%RB@50	0.142	0.087	21.17	22.50	0.193	Battery 1#	/
Main	Back side	15mm	18700/1860.0	20M QPSK 50%RB@50	0.166	0.100	21.17	22.50	0.225	Battery 1#	/
Main	Back side	15mm	18900/1880.0	20M QPSK 1RB@50	0.186	0.109	21.18	22.50	0.252	Battery 2#	Plot
Main	Back side	15mm	18900/1880.0	20M QPSK 1RB@50	0.170	0.100	21.18	22.50	0.230	With SIM2	/

Table 35: Body Worn SAR test results of LTE Band 2

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	10mm	18900/1880.0	20M QPSK 1RB@50	0.035	0.010	15.45	16.80	0.048	Battery 1#	/
Second	Back side	10mm	18900/1880.0	20M QPSK 1RB@50	0.123	0.064	15.45	16.80	0.168	Battery 1#	/
Second	Left side	10mm	18900/1880.0	20M QPSK 1RB@50	0.035	0.010	15.45	16.80	0.048	Battery 1#	/
Second	Top side	10mm	18900/1880.0	20M QPSK 1RB@50	0.140	0.070	15.45	16.80	0.191	Battery 1#	/
Second	Front side	10mm	18700/1860.0	20M QPSK 50%RB@50	0.001	0.001	15.50	16.80	0.001	Battery 1#	/
Second	Back side	10mm	18700/1860.0	20M QPSK 50%RB@50	0.119	0.061	15.50	16.80	0.161	Battery 1#	/
Second	Left side	10mm	18700/1860.0	20M QPSK 50%RB@50	0.001	0.001	15.50	16.80	0.001	Battery 1#	/
Second	Top side	10mm	18700/1860.0	20M QPSK 50%RB@50	0.130	0.065	15.50	16.80	0.175	Battery 1#	/
Second	Top side	10mm	18900/1880.0	20M QPSK 1RB@50	0.165	0.082	15.45	16.80	0.225	Battery 2#	/
Second	Top side	10mm	18900/1880.0	20M QPSK 1RB@50	0.131	0.067	15.45	16.80	0.179	With SIM2	/
Main	Front side	10mm	18900/1880.0	20M QPSK 1RB@0	0.254	0.148	20.65	22.00	0.347	Battery 1#	/
Main	Back side	10mm	18900/1880.0	20M QPSK 1RB@0	0.290	0.166	20.65	22.00	0.396	Battery 1#	/
Main	Left side	10mm	18900/1880.0	20M QPSK 1RB@0	0.112	0.062	20.65	22.00	0.153	Battery 1#	/
Main	Bottom side	10mm	18900/1880.0	20M QPSK 1RB@0	0.502	0.268	20.65	22.00	0.685	Battery 1#	/
Main	Front side	10mm	18900/1880.0	20M QPSK 50%RB@25	0.254	0.148	20.75	22.00	0.339	Battery 1#	/
Main	Back side	10mm	18900/1880.0	20M QPSK 50%RB@25	0.299	0.170	20.75	22.00	0.399	Battery 1#	/
Main	Left side	10mm	18900/1880.0	20M QPSK 50%RB@25	0.116	0.065	20.75	22.00	0.155	Battery 1#	/
Main	Bottom side	10mm	18900/1880.0	20M QPSK 50%RB@25	0.521	0.274	20.75	22.00	0.695	Battery 1#	/
Main	Bottom side	10mm	18900/1880.0	20M QPSK 50%RB@25	0.571	0.310	20.75	22.00	0.761	Battery 2#	Plot
Main	Bottom side	10mm	18900/1880.0	20M QPSK 50%RB@25	0.518	0.278	20.75	22.00	0.691	With SIM2	/

Table 36: Hotspot SAR test results of LTE Band 2

Per KDB648474 D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Max Power Without Reduction	Scaled-up 1-g SAR (W/kg)	Product Specific 10-g SAR Exclusion
Second	Front side	10mm	18900/1880.0	20M QPSK 1RB@50	0.035	0.010	15.45	21.30	0.135	Yes
Second	Back side	10mm	18900/1880.0	20M QPSK 1RB@50	0.123	0.064	15.45	21.30	0.473	Yes
Second	Left side	10mm	18900/1880.0	20M QPSK 1RB@50	0.035	0.010	15.45	21.30	0.135	Yes
Second	Top side	10mm	18900/1880.0	20M QPSK 1RB@50	0.140	0.070	15.45	21.30	0.538	Yes
Second	Front side	10mm	18700/1860.0	20M QPSK 50%RB@50	0.001	0.001	15.50	21.30	0.004	Yes
Second	Back side	10mm	18700/1860.0	20M QPSK 50%RB@50	0.119	0.061	15.50	21.30	0.452	Yes
Second	Left side	10mm	18700/1860.0	20M QPSK 50%RB@50	0.001	0.001	15.50	21.30	0.004	Yes
Second	Top side	10mm	18700/1860.0	20M QPSK 50%RB@50	0.130	0.065	15.50	21.30	0.494	Yes
Second	Top side	10mm	18900/1880.0	20M QPSK 1RB@50	0.165	0.082	15.45	21.30	0.635	Yes
Second	Top side	10mm	18900/1880.0	20M QPSK 1RB@50	0.131	0.067	15.45	21.30	0.504	Yes
Main	Front side	10mm	18900/1880.0	20M QPSK 1RB@0	0.254	0.148	20.65	22.50	0.389	Yes
Main	Back side	10mm	18900/1880.0	20M QPSK 1RB@0	0.290	0.166	20.65	22.50	0.444	Yes
Main	Left side	10mm	18900/1880.0	20M QPSK 1RB@0	0.112	0.062	20.65	22.50	0.171	Yes
Main	Bottom side	10mm	18900/1880.0	20M QPSK 1RB@0	0.502	0.268	20.65	22.50	0.769	Yes
Main	Front side	10mm	18900/1880.0	20M QPSK 50%RB@25	0.254	0.148	20.75	22.50	0.380	Yes
Main	Back side	10mm	18900/1880.0	20M QPSK 50%RB@25	0.299	0.170	20.75	22.50	0.447	Yes
Main	Left side	10mm	18900/1880.0	20M QPSK 50%RB@25	0.116	0.065	20.75	22.50	0.174	Yes
Main	Bottom side	10mm	18900/1880.0	20M QPSK 50%RB@25	0.521	0.274	20.75	22.50	0.780	Yes
Main	Bottom side	10mm	18900/1880.0	20M QPSK 50%RB@25	0.571	0.310	20.75	22.50	0.854	Yes
Main	Bottom side	10mm	18900/1880.0	20M QPSK 50%RB@25	0.518	0.278	20.75	22.50	0.775	Yes

Table 37: Product Specific 10-g SAR test reduction evaluation of LTE Band 2

Note: According to the table above, Product Specific 10-g SAR test is not required for this frequency band.

7.2.7 SAR measurement Results of LTE Band 5

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Left cheek	/	20525/836.5	10M QPSK 1RB@0	0.045	0.027	24.20	25.50	0.061	Battery 1#	/
Second	Left tilt	/	20525/836.5	10M QPSK 1RB@0	0.001	0.001	24.20	25.50	0.001	Battery 1#	/
Second	Right cheek	/	20525/836.5	10M QPSK 1RB@0	0.072	0.044	24.20	25.50	0.097	Battery 1#	/
Second	Right tilt	/	20525/836.5	10M QPSK 1RB@0	0.001	0.001	24.20	25.50	0.001	Battery 1#	/
Second	Left cheek	/	20525/836.5	10M QPSK 50%RB@25	0.052	0.035	23.11	24.50	0.072	Battery 1#	/
Second	Left tilt	/	20525/836.5	10M QPSK 50%RB@25	0.001	0.001	23.11	24.50	0.001	Battery 1#	/
Second	Right cheek	/	20525/836.5	10M QPSK 50%RB@25	0.079	0.048	23.11	24.50	0.109	Battery 1#	/
Second	Right tilt	/	20525/836.5	10M QPSK 50%RB@25	0.001	0.001	23.11	24.50	0.001	Battery 1#	/
Second	Right cheek	/	20525/836.5	10M QPSK 50%RB@25	0.095	0.057	23.11	24.50	0.131	Battery 2#	/
Second	Right cheek	/	20525/836.5	10M QPSK 50%RB@25	0.060	0.035	23.11	24.50	0.083	With SIM2	/
Main	Left cheek	/	20450/829	10M QPSK 1RB@0	0.160	0.117	24.07	25.30	0.212	Battery 1#	/
Main	Left tilt	/	20450/829	10M QPSK 1RB@0	0.077	0.057	24.07	25.30	0.102	Battery 1#	/
Main	Right cheek	/	20450/829	10M QPSK 1RB@0	0.156	0.106	24.07	25.30	0.207	Battery 1#	/
Main	Right tilt	/	20450/829	10M QPSK 1RB@0	0.093	0.068	24.07	25.30	0.123	Battery 1#	/
Main	Left cheek	/	20450/829	10M QPSK 50%RB@13	0.155	0.108	23.11	24.30	0.204	Battery 1#	/
Main	Left tilt	/	20450/829	10M QPSK 50%RB@13	0.071	0.053	23.11	24.30	0.093	Battery 1#	/
Main	Right cheek	/	20450/829	10M QPSK 50%RB@13	0.143	0.098	23.11	24.30	0.188	Battery 1#	/
Main	Right tilt	/	20450/829	10M QPSK 50%RB@13	0.087	0.064	23.11	24.30	0.114	Battery 1#	/
Main	Left cheek	/	20450/829	10M QPSK 1RB@0	0.162	0.124	24.07	25.30	0.215	Battery 2#	Plot
Main	Left cheek	/	20450/829	10M QPSK 1RB@0	0.149	0.102	24.07	25.30	0.198	With SIM2	/

Table 38: Head SAR test results of LTE Band 5

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	15mm	20525/836.5	10M QPSK 1RB@0	0.001	0.001	24.20	25.50	0.001	Battery 1#	/
Second	Back side	15mm	20525/836.5	10M QPSK 1RB@0	0.040	0.023	24.20	25.50	0.054	Battery 1#	/
Second	Front side	15mm	20525/836.5	10M QPSK 50%RB@25	0.001	0.001	23.11	24.50	0.001	Battery 1#	/
Second	Back side	15mm	20525/836.5	10M QPSK 50%RB@25	0.041	0.025	23.11	24.50	0.056	Battery 1#	/
Second	Back side	15mm	20525/836.5	10M QPSK 50%RB@25	0.042	0.026	23.11	24.50	0.058	Battery 2#	/
Second	Back side	15mm	20525/836.5	10M QPSK 50%RB@25	0.047	0.027	23.11	24.50	0.065	With SIM2	/
Main	Front side	15mm	20450/829	10M QPSK 1RB@0	0.154	0.104	24.07	25.30	0.204	Battery 1#	/
Main	Back side	15mm	20450/829	10M QPSK 1RB@0	0.188	0.128	24.07	25.30	0.250	Battery 1#	/
Main	Front side	15mm	20450/829	10M QPSK 50%RB@13	0.140	0.095	23.11	24.30	0.184	Battery 1#	/
Main	Back side	15mm	20450/829	10M QPSK 50%RB@13	0.169	0.115	23.11	24.30	0.222	Battery 1#	/
Main	Back side	15mm	20450/829	10M QPSK 1RB@0	0.213	0.154	24.07	25.30	0.283	Battery 2#	Plot
Main	Back side	15mm	20450/829	10M QPSK 1RB@0	0.184	0.127	24.07	25.30	0.244	With SIM2	/

Table 39: Body Worn SAR test results of LTE Band 5

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	10mm	20525/836.5	10M QPSK 1RB@0	0.001	0.001	24.20	25.50	0.001	Battery 1#	/
Second	Back side	10mm	20525/836.5	10M QPSK 1RB@0	0.080	0.045	24.20	25.50	0.108	Battery 1#	/
Second	Left side	10mm	20525/836.5	10M QPSK 1RB@0	0.090	0.048	24.20	25.50	0.121	Battery 1#	/
Second	Top side	10mm	20525/836.5	10M QPSK 1RB@0	0.001	0.001	24.20	25.50	0.001	Battery 1#	/
Second	Front side	10mm	20525/836.5	10M QPSK 50%RB@25	0.001	0.001	23.11	24.50	0.001	Battery 1#	/
Second	Back side	10mm	20525/836.5	10M QPSK 50%RB@25	0.087	0.050	23.11	24.50	0.120	Battery 1#	/
Second	Left side	10mm	20525/836.5	10M QPSK 50%RB@25	0.091	0.049	23.11	24.50	0.125	Battery 1#	/
Second	Top side	10mm	20525/836.5	10M QPSK 50%RB@25	0.001	0.001	23.11	24.50	0.001	Battery 1#	/
Second	Left side	10mm	20525/836.5	10M QPSK 50%RB@25	0.118	0.064	23.11	24.50	0.163	Battery 2#	/
Second	Left side	10mm	20525/836.5	10M QPSK 50%RB@25	0.068	0.035	23.11	24.50	0.094	With SIM2	/
Main	Front side	10mm	20450/829	10M QPSK 1RB@0	0.260	0.171	24.07	25.30	0.345	Battery 1#	/
Main	Back side	10mm	20450/829	10M QPSK 1RB@0	0.306	0.201	24.07	25.30	0.406	Battery 1#	/
Main	Right side	10mm	20450/829	10M QPSK 1RB@0	0.119	0.078	24.07	25.30	0.158	Battery 1#	/
Main	Bottom side	10mm	20450/829	10M QPSK 1RB@0	0.167	0.099	24.07	25.30	0.222	Battery 1#	/
Main	Front side	10mm	20450/829	10M QPSK 50%RB@13	0.234	0.152	23.11	24.30	0.308	Battery 1#	/
Main	Back side	10mm	20450/829	10M QPSK 50%RB@13	0.276	0.182	23.11	24.30	0.363	Battery 1#	/
Main	Right side	10mm	20450/829	10M QPSK 50%RB@13	0.110	0.072	23.11	24.30	0.145	Battery 1#	/
Main	Bottom side	10mm	20450/829	10M QPSK 50%RB@13	0.152	0.090	23.11	24.30	0.200	Battery 1#	/
Main	Back side	10mm	20450/829	10M QPSK 1RB@0	0.316	0.219	24.07	25.30	0.419	Battery 1#	Plot
Main	Back side	10mm	20450/829	10M QPSK 1RB@0	0.305	0.198	24.07	25.30	0.405	With SIM2	/

Table 40: Hotspot SAR test results of LTE Band 5

Per KDB648474 D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Max Power Without Reduction	Scaled-up 1-g SAR (W/kg)	Product Specific 10-g SAR Exclusion
Second	Front side	10mm	20525/836.5	10M QPSK 1RB@0	0.001	0.001	24.20	25.50	0.001	Yes
Second	Back side	10mm	20525/836.5	10M QPSK 1RB@0	0.080	0.045	24.20	25.50	0.108	Yes
Second	Left side	10mm	20525/836.5	10M QPSK 1RB@0	0.090	0.048	24.20	25.50	0.121	Yes
Second	Top side	10mm	20525/836.5	10M QPSK 1RB@0	0.001	0.001	24.20	25.50	0.001	Yes
Second	Front side	10mm	20525/836.5	10M QPSK 50%RB@25	0.001	0.001	23.11	24.50	0.001	Yes
Second	Back side	10mm	20525/836.5	10M QPSK 50%RB@25	0.087	0.050	23.11	24.50	0.120	Yes
Second	Left side	10mm	20525/836.5	10M QPSK 50%RB@25	0.091	0.049	23.11	24.50	0.125	Yes
Second	Top side	10mm	20525/836.5	10M QPSK 50%RB@25	0.001	0.001	23.11	24.50	0.001	Yes
Second	Left side	10mm	20525/836.5	10M QPSK 50%RB@25	0.118	0.064	23.11	24.50	0.163	Yes
Second	Left side	10mm	20525/836.5	10M QPSK 50%RB@25	0.068	0.035	23.11	24.50	0.094	Yes
Main	Front side	10mm	20450/829	10M QPSK 1RB@0	0.260	0.171	24.07	25.30	0.345	Yes
Main	Back side	10mm	20450/829	10M QPSK 1RB@0	0.306	0.201	24.07	25.30	0.406	Yes
Main	Right side	10mm	20450/829	10M QPSK 1RB@0	0.119	0.078	24.07	25.30	0.158	Yes
Main	Bottom side	10mm	20450/829	10M QPSK 1RB@0	0.167	0.099	24.07	25.30	0.222	Yes
Main	Front side	10mm	20450/829	10M QPSK 50%RB@13	0.234	0.152	23.11	24.30	0.308	Yes
Main	Back side	10mm	20450/829	10M QPSK 50%RB@13	0.276	0.182	23.11	24.30	0.363	Yes
Main	Right side	10mm	20450/829	10M QPSK 50%RB@13	0.110	0.072	23.11	24.30	0.145	Yes
Main	Bottom side	10mm	20450/829	10M QPSK 50%RB@13	0.152	0.090	23.11	24.30	0.200	Yes
Main	Back side	10mm	20450/829	10M QPSK 1RB@0	0.316	0.219	24.07	25.30	0.419	Yes
Main	Back side	10mm	20450/829	10M QPSK 1RB@0	0.305	0.198	24.07	25.30	0.405	Yes

Table 41: Product Specific 10-g SAR test reduction evaluation of LTE Band 5

Note: According to the table above, Product Specific 10-g SAR test is not required for this frequency band.

7.2.8 SAR measurement Results of LTE Band 7

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Left cheek	/	20850/2510.0	20M QPSK 1RB@0	0.239	0.123	14.67	15.70	0.303	Battery 1#	/
Second	Left tilt	/	20850/2510.0	20M QPSK 1RB@0	0.262	0.130	14.67	15.70	0.332	Battery 1#	/
Second	Right cheek	/	20850/2510.0	20M QPSK 1RB@0	0.310	0.143	14.67	15.70	0.393	Battery 1#	/
Second	Right tilt	/	20850/2510.0	20M QPSK 1RB@0	0.408	0.187	14.67	15.70	0.517	Battery 1#	/
Second	Left cheek	/	20850/2510.0	20M QPSK 50%RB@25	0.256	0.131	14.78	15.70	0.316	Battery 1#	/
Second	Left tilt	/	20850/2510.0	20M QPSK 50%RB@25	0.276	0.134	14.78	15.70	0.341	Battery 1#	/
Second	Right cheek	/	20850/2510.0	20M QPSK 50%RB@25	0.338	0.155	14.78	15.70	0.418	Battery 1#	/
Second	Right tilt	/	20850/2510.0	20M QPSK 50%RB@25	0.435	0.201	14.78	15.70	0.538	Battery 1#	/
Second	Right tilt	/	20850/2510.0	20M QPSK 50%RB@25	0.538	0.232	14.78	15.70	0.665	Battery 2#	Plot
Second	Right tilt	/	20850/2510.0	20M QPSK 50%RB@25	0.412	0.190	14.78	15.70	0.509	With SIM2	/
Second	Right tilt	/	PCC:21350CH SCC:21152CH	PCC: 20M QPSK 1RB@0 SCC: 20M QPSK 15RB@85	0.466	0.216	14.16	15.70	0.664	Battery 2#	/
Main	Left cheek	/	20850/2510.0	20M QPSK 1RB@0	0.127	0.068	22.73	24.00	0.170	Battery 1#	/
Main	Left tilt	/	20850/2510.0	20M QPSK 1RB@0	0.088	0.044	22.73	24.00	0.118	Battery 1#	/
Main	Right cheek	/	20850/2510.0	20M QPSK 1RB@0	0.133	0.068	22.73	24.00	0.178	Battery 1#	/
Main	Right tilt	/	20850/2510.0	20M QPSK 1RB@0	0.103	0.050	22.73	24.00	0.138	Battery 1#	/
Main	Left cheek	/	20850/2510.0	20M QPSK 50%RB@0	0.105	0.056	21.87	23.00	0.136	Battery 1#	/
Main	Left tilt	/	20850/2510.0	20M QPSK 50%RB@0	0.072	0.036	21.87	23.00	0.093	Battery 1#	/
Main	Right cheek	/	20850/2510.0	20M QPSK 50%RB@0	0.112	0.057	21.87	23.00	0.145	Battery 1#	/
Main	Right tilt	/	20850/2510.0	20M QPSK 50%RB@0	0.090	0.043	21.87	23.00	0.117	Battery 1#	/
Main	Right cheek	/	20850/2510.0	20M QPSK 1RB@0	0.159	0.084	22.73	24.00	0.213	Battery 2#	/
Main	Right cheek	/	20850/2510.0	20M QPSK 1RB@0	0.126	0.065	22.73	24.00	0.169	With SIM2	/
Main	Right cheek	/	PCC:21100CH SCC:20902CH	PCC: 20M QPSK 1RB@0 SCC: 20M QPSK 15RB@85	0.092	0.047	23.40	24.00	0.106	Battery 2#	/

Table 42: Head SAR test results of LTE Band 7

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	15mm	20850/2510.0	20M QPSK 1RB@0	0.118	0.063	20.11	21.20	0.152	Battery 1#	/
Second	Back side	15mm	20850/2510.0	20M QPSK 1RB@0	0.166	0.086	20.11	21.20	0.213	Battery 1#	/
Second	Front side	15mm	20850/2510.0	20M QPSK 50%RB@0	0.125	0.067	20.28	21.20	0.154	Battery 1#	/
Second	Back side	15mm	20850/2510.0	20M QPSK 50%RB@0	0.179	0.093	20.28	21.20	0.221	Battery 1#	/
Second	Back side	15mm	20850/2510.0	20M QPSK 50%RB@0	0.210	0.111	20.28	21.20	0.260	Battery 2#	/
Second	Back side	15mm	20850/2510.0	20M QPSK 50%RB@0	0.160	0.082	20.28	21.20	0.198	With SIM2	/
Second	Back side	15mm	PCC:21350CH SCC:21152CH	PCC: 20M QPSK 1RB@0 SCC: 20M QPSK 15RB@85	0.171	0.089	19.89	21.20	0.231	Battery 2#	/
Main	Front side	15mm	20850/2510.0	20M QPSK 1RB@0	0.169	0.094	20.76	22.00	0.225	Battery 1#	/
Main	Back side	15mm	20850/2510.0	20M QPSK 1RB@0	0.240	0.129	20.76	22.00	0.319	Battery 1#	/
Main	Front side	15mm	20850/2510.0	20M QPSK 50%RB@0	0.182	0.100	20.86	22.00	0.237	Battery 1#	/
Main	Back side	15mm	20850/2510.0	20M QPSK 50%RB@0	0.246	0.133	20.86	22.00	0.320	Battery 1#	/
Main	Back side	15mm	20850/2510.0	20M QPSK 50%RB@0	0.247	0.134	20.86	22.00	0.321	Battery 2#	Plot
Main	Back side	15mm	20850/2510.1	20M QPSK 50%RB@0	0.224	0.120	20.86	22.00	0.291	With SIM2	/
Main	Back side	15mm	PCC:21100CH SCC:20902CH	PCC: 20M QPSK 1RB@0 SCC: 20M QPSK 15RB@85	0.221	0.119	21.31	22.00	0.259	Battery 2#	/

Table 43: Body Worn SAR test results of LTE Band 7

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	10mm	20850/2510.0	20M QPSK 1RB@0	0.070	0.034	14.67	15.70	0.089	Battery 1#	/
Second	Back side	10mm	20850/2510.0	20M QPSK 1RB@0	0.096	0.047	14.67	15.70	0.122	Battery 1#	/
Second	Left side	10mm	20850/2510.0	20M QPSK 1RB@0	0.001	0.001	14.67	15.70	0.001	Battery 1#	/
Second	Top side	10mm	20850/2510.0	20M QPSK 1RB@0	0.102	0.050	14.67	15.70	0.129	Battery 1#	/
Second	Front side	10mm	20850/2510.0	20M QPSK 50%RB@25	0.074	0.037	14.78	15.70	0.091	Battery 1#	/
Second	Back side	10mm	20850/2510.0	20M QPSK 50%RB@25	0.102	0.050	14.78	15.70	0.126	Battery 1#	/
Second	Left side	10mm	20850/2510.0	20M QPSK 50%RB@25	0.000	0.000	14.78	15.70	0.000	Battery 1#	/
Second	Top side	10mm	20850/2510.0	20M QPSK 50%RB@25	0.117	0.056	14.78	15.70	0.145	Battery 1#	/
Second	Top side	10mm	20850/2510.0	20M QPSK 50%RB@25	0.190	0.088	14.78	15.70	0.235	Battery 2#	/
Second	Top side	10mm	20850/2510.0	20M QPSK 50%RB@25	0.099	0.048	14.78	15.70	0.122	With SIM2	/
Second	Top side	10mm	PCC:21350CH SCC:21152CH	PCC: 20M QPSK 1RB@0 SCC: 20M QPSK 15RB@85	0.128	0.063	14.16	15.70	0.182	Battery 2#	/
Main	Front side	10mm	20850/2510.0	20M QPSK 1RB@0	0.199	0.105	18.74	20.00	0.266	Battery 1#	/
Main	Back side	10mm	20850/2510.0	20M QPSK 1RB@0	0.272	0.139	18.74	20.00	0.364	Battery 1#	/
Main	Left side	10mm	20850/2510.0	20M QPSK 1RB@0	0.072	0.039	18.74	20.00	0.096	Battery 1#	/
Main	Bottom side	10mm	20850/2510.0	20M QPSK 1RB@0	0.437	0.211	18.74	20.00	0.584	Battery 1#	/
Main	Front side	10mm	20850/2510.0	20M QPSK 50%RB@0	0.202	0.106	18.93	20.00	0.258	Battery 1#	/
Main	Back side	10mm	20850/2510.0	20M QPSK 50%RB@0	0.283	0.144	18.93	20.00	0.362	Battery 1#	/
Main	Left side	10mm	20850/2510.0	20M QPSK 50%RB@0	0.071	0.039	18.93	20.00	0.091	Battery 1#	/
Main	Bottom side	10mm	20850/2510.0	20M QPSK 50%RB@0	0.461	0.224	18.93	20.00	0.590	Battery 1#	/
Main	Bottom side	10mm	20850/2510.0	20M QPSK 50%RB@0	0.494	0.241	18.93	20.00	0.632	Battery 2#	Plot
Main	Bottom side	10mm	20850/2510.0	20M QPSK 50%RB@0	0.434	0.207	18.93	20.00	0.555	With SIM2	/
Main	Bottom side	10mm	PCC:21100CH SCC:20902CH	PCC: 20M QPSK 1RB@0 SCC: 20M QPSK 15RB@85	0.444	0.212	19.51	20.00	0.497	Battery 2#	/

Table 44: Hotspot SAR test results of LTE Band 7

Per KDB648474 D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Max Power Without Reduction	Scaled-up 1-g SAR (W/kg)	Product Specific 10-g SAR Exclusion
Second	Front side	10mm	20850/2510.0	20M QPSK 1RB@0	0.070	0.034	14.67	21.20	0.315	Yes
Second	Back side	10mm	20850/2510.0	20M QPSK 1RB@0	0.096	0.047	14.67	21.20	0.432	Yes
Second	Left side	10mm	20850/2510.0	20M QPSK 1RB@0	0.001	0.001	14.67	21.20	0.004	Yes
Second	Top side	10mm	20850/2510.0	20M QPSK 1RB@0	0.102	0.050	14.67	21.20	0.459	Yes
Second	Front side	10mm	20850/2510.0	20M QPSK 50%RB@25	0.074	0.037	14.78	21.20	0.325	Yes
Second	Back side	10mm	20850/2510.0	20M QPSK 50%RB@25	0.102	0.050	14.78	21.20	0.447	Yes
Second	Left side	10mm	20850/2510.0	20M QPSK 50%RB@25	0.000	0.000	14.78	21.20	0.000	Yes
Second	Top side	10mm	20850/2510.0	20M QPSK 50%RB@25	0.117	0.056	14.78	21.20	0.513	Yes
Second	Top side	10mm	20850/2510.0	20M QPSK 50%RB@25	0.190	0.088	14.78	21.20	0.833	Yes
Second	Top side	10mm	20850/2510.0	20M QPSK 50%RB@25	0.099	0.048	14.78	21.20	0.434	Yes
Second	Top side	10mm	PCC:21350CH SCC:21152CH	PCC: 20M QPSK 1RB@0 SCC: 20M QPSK 15RB@85	0.128	0.063	14.16	21.20	0.647	Yes
Main	Front side	10mm	20850/2510.0	20M QPSK 1RB@0	0.199	0.105	18.74	22.00	0.422	Yes
Main	Back side	10mm	20850/2510.0	20M QPSK 1RB@0	0.272	0.139	18.74	22.00	0.576	Yes
Main	Left side	10mm	20850/2510.0	20M QPSK 1RB@0	0.072	0.039	18.74	22.00	0.153	Yes
Main	Bottom side	10mm	20850/2510.0	20M QPSK 1RB@0	0.437	0.211	18.74	22.00	0.926	Yes
Main	Front side	10mm	20850/2510.0	20M QPSK 50%RB@0	0.202	0.106	18.93	22.00	0.410	Yes
Main	Back side	10mm	20850/2510.0	20M QPSK 50%RB@0	0.283	0.144	18.93	22.00	0.574	Yes
Main	Left side	10mm	20850/2510.0	20M QPSK 50%RB@0	0.071	0.039	18.93	22.00	0.144	Yes
Main	Bottom side	10mm	20850/2510.0	20M QPSK 50%RB@0	0.461	0.224	18.93	22.00	0.935	Yes
Main	Bottom side	10mm	20850/2510.0	20M QPSK 50%RB@0	0.494	0.241	18.93	22.00	1.002	Yes
Main	Bottom side	10mm	20850/2510.0	20M QPSK 50%RB@0	0.434	0.207	18.93	22.00	0.880	Yes
Main	Bottom side	10mm	PCC:21100CH SCC:20902CH	PCC: 20M QPSK 1RB@0 SCC: 20M QPSK 15RB@85	0.444	0.212	19.51	22.00	0.788	Yes

Table 45: Product Specific 10-g SAR test reduction evaluation of LTE Band 7

Note: According to the table above, Product Specific 10-g SAR test is not required for this frequency band.

7.2.9 SAR measurement Results of LTE Band 12

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Left cheek	/	23095/707.5	10M QPSK 1RB@0	0.045	0.028	24.06	25.20	0.059	Battery 1#	/
Second	Left tilt	/	23095/707.5	10M QPSK 1RB@0	0.001	0.001	24.06	25.20	0.001	Battery 1#	/
Second	Right cheek	/	23095/707.5	10M QPSK 1RB@0	0.069	0.041	24.06	25.20	0.090	Battery 1#	/
Second	Right tilt	/	23095/707.5	10M QPSK 1RB@0	0.001	0.001	24.06	25.20	0.001	Battery 1#	/
Second	Left cheek	/	23095/707.5	10M QPSK 50%RB@0	0.001	0.001	22.92	24.20	0.001	Battery 1#	/
Second	Left tilt	/	23095/707.5	10M QPSK 50%RB@0	0.001	0.001	22.92	24.20	0.001	Battery 1#	/
Second	Right cheek	/	23095/707.5	10M QPSK 50%RB@0	0.060	0.035	22.92	24.20	0.081	Battery 1#	/
Second	Right tilt	/	23095/707.5	10M QPSK 50%RB@0	0.001	0.001	22.92	24.20	0.001	Battery 1#	/
Second	Right cheek	/	23095/707.5	10M QPSK 1RB@0	0.070	0.043	24.06	25.20	0.091	Battery 2#	/
Second	Right cheek	/	23095/707.5	10M QPSK 1RB@0	0.063	0.036	24.06	25.20	0.082	With SIM2	/
Main	Left cheek	/	23095/707.5	10M QPSK 1RB@0	0.084	0.059	23.98	25.00	0.106	Battery 1#	/
Main	Left tilt	/	23095/707.5	10M QPSK 1RB@0	0.001	0.001	23.98	25.00	0.001	Battery 1#	/
Main	Right cheek	/	23095/707.5	10M QPSK 1RB@0	0.057	0.039	23.98	25.00	0.072	Battery 1#	/
Main	Right tilt	/	23095/707.5	10M QPSK 1RB@0	0.001	0.001	23.98	25.00	0.001	Battery 1#	/
Main	Left cheek	/	23060/704	10M QPSK 50%RB@13	0.062	0.044	22.97	24.00	0.079	Battery 1#	/
Main	Left tilt	/	23060/704	10M QPSK 50%RB@13	0.001	0.001	22.97	24.00	0.001	Battery 1#	/
Main	Right cheek	/	23060/704	10M QPSK 50%RB@13	0.048	0.033	22.97	24.00	0.061	Battery 1#	/
Main	Right tilt	/	23060/704	10M QPSK 50%RB@13	0.001	0.001	22.97	24.00	0.001	Battery 1#	/
Main	Left cheek	/	23095/707.5	10M QPSK 1RB@0	0.091	0.070	23.98	25.00	0.115	Battery 2#	Plot
Main	Left cheek	/	23095/707.5	10M QPSK 1RB@0	0.072	0.051	23.98	25.00	0.091	With SIM2	/

Table 46: Head SAR test results of LTE Band 12

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	15mm	23095/707.5	10M QPSK 1RB@0	0.001	0.001	24.06	25.20	0.001	Battery 1#	/
Second	Back side	15mm	23095/707.5	10M QPSK 1RB@0	0.051	0.032	24.06	25.20	0.066	Battery 1#	/
Second	Front side	15mm	23095/707.5	10M QPSK 50%RB@0	0.001	0.001	22.92	24.20	0.001	Battery 1#	/
Second	Back side	15mm	23095/707.5	10M QPSK 50%RB@0	0.049	0.030	22.92	24.20	0.066	Battery 1#	/
Second	Back side	15mm	23095/707.5	10M QPSK 1RB@0	0.053	0.034	24.06	25.20	0.069	Battery 2#	/
Second	Back side	15mm	23095/707.5	10M QPSK 1RB@0	0.049	0.029	24.06	25.20	0.064	With SIM2	/
Main	Front side	15mm	23095/707.5	10M QPSK 1RB@0	0.128	0.090	23.98	25.00	0.162	Battery 1#	/
Main	Back side	15mm	23095/707.5	10M QPSK 1RB@0	0.143	0.100	23.98	25.00	0.181	Battery 1#	/
Main	Front side	15mm	23060/704	10M QPSK 50%RB@13	0.105	0.075	22.97	24.00	0.133	Battery 1#	/
Main	Back side	15mm	23060/704	10M QPSK 50%RB@13	0.136	0.096	22.97	24.00	0.172	Battery 1#	/
Main	Back side	15mm	23095/707.5	10M QPSK 1RB@0	0.172	0.130	23.98	25.00	0.218	Battery 2#	Plot
Main	Back side	15mm	23095/707.5	10M QPSK 1RB@0	0.170	0.121	23.98	25.00	0.215	With SIM2	/

Table 47: Body Worn SAR test results of LTE Band 12

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	10mm	23095/707.5	10M QPSK 1RB@0	0.001	0.001	24.06	25.20	0.001	Battery 1#	/
Second	Back side	10mm	23095/707.5	10M QPSK 1RB@0	0.107	0.059	24.06	25.20	0.139	Battery 1#	/
Second	Left side	10mm	23095/707.5	10M QPSK 1RB@0	0.153	0.090	24.06	25.20	0.199	Battery 1#	/
Second	Top side	10mm	23095/707.5	10M QPSK 1RB@0	0.001	0.001	24.06	25.20	0.001	Battery 1#	/
Second	Front side	10mm	23095/707.5	10M QPSK 50%RB@0	0.001	0.001	22.92	24.20	0.001	Battery 1#	/
Second	Back side	10mm	23095/707.5	10M QPSK 50%RB@0	0.087	0.050	22.92	24.20	0.117	Battery 1#	/
Second	Left side	10mm	23095/707.5	10M QPSK 50%RB@0	0.122	0.072	22.92	24.20	0.164	Battery 1#	/
Second	Top side	10mm	23095/707.5	10M QPSK 50%RB@0	0.001	0.001	22.92	24.20	0.001	Battery 1#	/
Second	Left side	10mm	23095/707.5	10M QPSK 1RB@0	0.191	0.114	24.06	25.20	0.248	Battery 2#	/
Second	Left side	10mm	23095/707.5	10M QPSK 1RB@0	0.135	0.077	24.06	25.20	0.176	With SIM2	/
Main	Front side	10mm	23095/707.5	10M QPSK 1RB@0	0.200	0.133	23.98	25.00	0.253	Battery 1#	/
Main	Back side	10mm	23095/707.5	10M QPSK 1RB@0	0.223	0.156	23.98	25.00	0.282	Battery 1#	/
Main	Right side	10mm	23095/707.5	10M QPSK 1RB@0	0.133	0.089	23.98	25.00	0.168	Battery 1#	/
Main	Bottom side	10mm	23095/707.5	10M QPSK 1RB@0	0.077	0.042	23.98	25.00	0.097	Battery 1#	/
Main	Front side	10mm	23060/704	10M QPSK 50%RB@13	0.176	0.117	22.97	24.00	0.223	Battery 1#	/
Main	Back side	10mm	23060/704	10M QPSK 50%RB@13	0.183	0.123	22.97	24.00	0.232	Battery 1#	/
Main	Right side	10mm	23060/704	10M QPSK 50%RB@13	0.109	0.073	22.97	24.00	0.138	Battery 1#	/
Main	Bottom side	10mm	23060/704	10M QPSK 50%RB@13	0.064	0.034	22.97	24.00	0.081	Battery 1#	/
Main	Back side	10mm	23095/707.5	10M QPSK 1RB@0	0.224	0.160	23.98	25.00	0.283	Battery 2#	Plot
Main	Back side	10mm	23095/707.5	10M QPSK 1RB@0	0.221	0.149	23.98	25.00	0.280	With SIM2	/

Table 48: Hotspot SAR test results of LTE Band 12

Per KDB648474 D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Max Power Without Reduction	Scaled-up 1-g SAR (W/kg)	Product Specific 10-g SAR Exclusion
Second	Front side	10mm	23095/707.5	10M QPSK 1RB@0	0.001	0.001	24.06	25.20	0.001	Yes
Second	Back side	10mm	23095/707.5	10M QPSK 1RB@0	0.107	0.059	24.06	25.20	0.139	Yes
Second	Left side	10mm	23095/707.5	10M QPSK 1RB@0	0.153	0.090	24.06	25.20	0.199	Yes
Second	Top side	10mm	23095/707.5	10M QPSK 1RB@0	0.001	0.001	24.06	25.20	0.001	Yes
Second	Front side	10mm	23095/707.5	10M QPSK 50%RB@0	0.001	0.001	22.92	24.20	0.001	Yes
Second	Back side	10mm	23095/707.5	10M QPSK 50%RB@0	0.087	0.050	22.92	24.20	0.117	Yes
Second	Left side	10mm	23095/707.5	10M QPSK 50%RB@0	0.122	0.072	22.92	24.20	0.164	Yes
Second	Top side	10mm	23095/707.5	10M QPSK 50%RB@0	0.001	0.001	22.92	24.20	0.001	Yes
Second	Left side	10mm	23095/707.5	10M QPSK 1RB@0	0.191	0.114	24.06	25.20	0.248	Yes
Second	Left side	10mm	23095/707.5	10M QPSK 1RB@0	0.135	0.077	24.06	25.20	0.176	Yes
Main	Front side	10mm	23095/707.5	10M QPSK 1RB@0	0.200	0.133	23.98	25.00	0.253	Yes
Main	Back side	10mm	23095/707.5	10M QPSK 1RB@0	0.223	0.156	23.98	25.00	0.282	Yes
Main	Right side	10mm	23095/707.5	10M QPSK 1RB@0	0.133	0.089	23.98	25.00	0.168	Yes
Main	Bottom side	10mm	23095/707.5	10M QPSK 1RB@0	0.077	0.042	23.98	25.00	0.097	Yes
Main	Front side	10mm	23060/704	10M QPSK 50%RB@13	0.176	0.117	22.97	24.00	0.223	Yes
Main	Back side	10mm	23060/704	10M QPSK 50%RB@13	0.183	0.123	22.97	24.00	0.232	Yes
Main	Right side	10mm	23060/704	10M QPSK 50%RB@13	0.109	0.073	22.97	24.00	0.138	Yes
Main	Bottom side	10mm	23060/704	10M QPSK 50%RB@13	0.064	0.034	22.97	24.00	0.081	Yes
Main	Back side	10mm	23095/707.5	10M QPSK 1RB@0	0.224	0.160	23.98	25.00	0.283	Yes
Main	Back side	10mm	23095/707.5	10M QPSK 1RB@0	0.221	0.149	23.98	25.00	0.280	Yes

Table 49: Product Specific 10-g SAR test reduction evaluation of LTE Band 12

Note: According to the table above, Product Specific 10-g SAR test is not required for this frequency band.

7.2.10 SAR measurement Results of LTE Band 26

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Left cheek	/	26965/841.5	15M QPSK 1RB@0	0.051	0.035	23.99	25.50	0.072	Battery 1#	/
Second	Left tilt	/	26965/841.5	15M QPSK 1RB@0	0.001	0.001	23.99	25.50	0.001	Battery 1#	/
Second	Right cheek	/	26965/841.5	15M QPSK 1RB@0	0.075	0.046	23.99	25.50	0.106	Battery 1#	/
Second	Right tilt	/	26965/841.5	15M QPSK 1RB@0	0.001	0.001	23.99	25.50	0.001	Battery 1#	/
Second	Left cheek	/	26865/831.5	15M QPSK 50%RB@39	0.045	0.031	23.09	24.50	0.062	Battery 1#	/
Second	Left tilt	/	26865/831.5	15M QPSK 50%RB@39	0.001	0.001	23.09	24.50	0.001	Battery 1#	/
Second	Right cheek	/	26865/831.5	15M QPSK 50%RB@39	0.068	0.041	23.09	24.50	0.094	Battery 1#	/
Second	Right tilt	/	26865/831.5	15M QPSK 50%RB@39	0.001	0.001	23.09	24.50	0.001	Battery 1#	/
Second	Right cheek	/	26965/841.5	15M QPSK 1RB@0	0.092	0.055	23.99	25.50	0.130	Battery 2#	/
Second	Right cheek	/	26965/841.5	15M QPSK 1RB@0	0.074	0.042	23.99	25.50	0.105	With SIM2	/
Main	Left cheek	/	26765/821.5	15M QPSK 1RB@0	0.145	0.099	24.05	25.30	0.193	Battery 1#	/
Main	Left tilt	/	26765/821.5	15M QPSK 1RB@0	0.069	0.050	24.05	25.30	0.092	Battery 1#	/
Main	Right cheek	/	26765/821.5	15M QPSK 1RB@0	0.124	0.086	24.05	25.30	0.165	Battery 1#	/
Main	Right tilt	/	26765/821.5	15M QPSK 1RB@0	0.078	0.056	24.05	25.30	0.104	Battery 1#	/
Main	Left cheek	/	26765/821.5	15M QPSK 50%RB@0	0.128	0.090	23.04	24.30	0.171	Battery 1#	/
Main	Left tilt	/	26765/821.5	15M QPSK 50%RB@0	0.061	0.045	23.04	24.30	0.082	Battery 1#	/
Main	Right cheek	/	26765/821.5	15M QPSK 50%RB@0	0.113	0.078	23.04	24.30	0.151	Battery 1#	/
Main	Right tilt	/	26765/821.5	15M QPSK 50%RB@0	0.069	0.050	23.04	24.30	0.092	Battery 1#	/
Main	Left cheek	/	26765/821.5	15M QPSK 1RB@0	0.147	0.112	24.05	25.30	0.196	Battery 2#	Plot
Main	Left cheek	/	26765/821.5	15M QPSK 1RB@0	0.144	0.099	24.05	25.30	0.192	With SIM2	/

Table 50: Head SAR test results of LTE Band 26

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	15mm	26965/841.5	15M QPSK 1RB@0	0.001	0.001	23.99	25.50	0.001	Battery 1#	/
Second	Back side	15mm	26965/841.5	15M QPSK 1RB@0	0.045	0.027	23.99	25.50	0.064	Battery 1#	/
Second	Front side	15mm	26865/831.5	15M QPSK 50%RB@39	0.001	0.001	23.09	24.50	0.001	Battery 1#	/
Second	Back side	15mm	26865/831.5	15M QPSK 50%RB@39	0.001	0.001	23.09	24.50	0.001	Battery 1#	/
Second	Back side	15mm	26965/841.5	15M QPSK 1RB@0	0.052	0.033	23.99	25.50	0.074	Battery 2#	/
Second	Back side	15mm	26965/841.5	15M QPSK 1RB@0	0.043	0.026	23.99	25.50	0.061	With SIM2	/
Main	Front side	15mm	26765/821.5	15M QPSK 1RB@0	0.137	0.093	24.05	25.30	0.183	Battery 1#	/
Main	Back side	15mm	26765/821.5	15M QPSK 1RB@0	0.181	0.123	24.05	25.30	0.241	Battery 1#	/
Main	Front side	15mm	26765/821.5	15M QPSK 50%RB@0	0.121	0.082	23.04	24.30	0.162	Battery 1#	/
Main	Back side	15mm	26765/821.5	15M QPSK 50%RB@0	0.150	0.103	23.04	24.30	0.200	Battery 1#	/
Main	Back side	15mm	26765/821.5	15M QPSK 1RB@0	0.208	0.150	24.05	25.30	0.277	Battery 2#	Plot
Main	Back side	15mm	26765/821.5	15M QPSK 1RB@0	0.179	0.122	24.05	25.30	0.239	With SIM2	/

Table 51: Body Worn SAR test results of LTE Band 26

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	10mm	26965/841.5	15M QPSK 1RB@0	0.001	0.001	23.99	25.50	0.001	Battery 1#	/
Second	Back side	10mm	26965/841.5	15M QPSK 1RB@0	0.088	0.050	23.99	25.50	0.125	Battery 1#	/
Second	Left side	10mm	26965/841.5	15M QPSK 1RB@0	0.086	0.047	23.99	25.50	0.122	Battery 1#	/
Second	Top side	10mm	26965/841.5	15M QPSK 1RB@0	0.001	0.001	23.99	25.50	0.001	Battery 1#	/
Second	Front side	10mm	26865/831.5	15M QPSK 50%RB@39	0.001	0.001	23.09	24.50	0.001	Battery 1#	/
Second	Back side	10mm	26865/831.5	15M QPSK 50%RB@39	0.076	0.043	23.09	24.50	0.105	Battery 1#	/
Second	Left side	10mm	26865/831.5	15M QPSK 50%RB@39	0.080	0.042	23.09	24.50	0.111	Battery 1#	/
Second	Top side	10mm	26865/831.5	15M QPSK 50%RB@39	0.001	0.001	23.09	24.50	0.001	Battery 1#	/
Second	Back side	10mm	26965/841.5	15M QPSK 1RB@0	0.099	0.058	23.99	25.50	0.140	Battery 2#	/
Second	Back side	10mm	26965/841.5	15M QPSK 1RB@0	0.078	0.044	23.99	25.50	0.110	With SIM2	/
Main	Front side	10mm	26765/821.5	15M QPSK 1RB@0	0.233	0.153	24.05	25.30	0.311	Battery 1#	/
Main	Back side	10mm	26765/821.5	15M QPSK 1RB@0	0.295	0.195	24.05	25.30	0.393	Battery 1#	/
Main	Right side	10mm	26765/821.5	15M QPSK 1RB@0	0.118	0.078	24.05	25.30	0.157	Battery 1#	/
Main	Bottom side	10mm	26765/821.5	15M QPSK 1RB@0	0.149	0.088	24.05	25.30	0.199	Battery 1#	/
Main	Front side	10mm	26765/821.5	15M QPSK 50%RB@0	0.209	0.136	23.04	24.30	0.279	Battery 1#	/
Main	Back side	10mm	26765/821.5	15M QPSK 50%RB@0	0.254	0.168	23.04	24.30	0.339	Battery 1#	/
Main	Right side	10mm	26765/821.5	15M QPSK 50%RB@0	0.103	0.068	23.04	24.30	0.138	Battery 1#	/
Main	Bottom side	10mm	26765/821.5	15M QPSK 50%RB@0	0.134	0.079	23.04	24.30	0.179	Battery 1#	/
Main	Back side	10mm	26765/821.5	15M QPSK 1RB@0	0.312	0.216	24.05	25.30	0.416	Battery 2#	Plot
Main	Back side	10mm	26765/821.5	15M QPSK 1RB@0	0.294	0.196	24.05	25.30	0.392	With SIM2	/

Table 52: Hotspot SAR test results of LTE Band 26

Per KDB648474 D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Max Power Without Reduction	Scaled-up 1-g SAR (W/kg)	Product Specific 10-g SAR Exclusion
Second	Front side	10mm	26965/841.5	15M QPSK 1RB@0	0.001	0.001	23.99	25.50	0.001	Yes
Second	Back side	10mm	26965/841.5	15M QPSK 1RB@0	0.088	0.050	23.99	25.50	0.125	Yes
Second	Left side	10mm	26965/841.5	15M QPSK 1RB@0	0.086	0.047	23.99	25.50	0.122	Yes
Second	Top side	10mm	26965/841.5	15M QPSK 1RB@0	0.001	0.001	23.99	25.50	0.001	Yes
Second	Front side	10mm	26865/831.5	15M QPSK 50%RB@39	0.001	0.001	23.09	24.50	0.001	Yes
Second	Back side	10mm	26865/831.5	15M QPSK 50%RB@39	0.076	0.043	23.09	24.50	0.105	Yes
Second	Left side	10mm	26865/831.5	15M QPSK 50%RB@39	0.080	0.042	23.09	24.50	0.111	Yes
Second	Top side	10mm	26865/831.5	15M QPSK 50%RB@39	0.001	0.001	23.09	24.50	0.001	Yes
Second	Back side	10mm	26965/841.5	15M QPSK 1RB@0	0.099	0.058	23.99	25.50	0.140	Yes
Second	Back side	10mm	26965/841.5	15M QPSK 1RB@0	0.078	0.044	23.99	25.50	0.110	Yes
Main	Front side	10mm	26765/821.5	15M QPSK 1RB@0	0.233	0.153	24.05	25.30	0.311	Yes
Main	Back side	10mm	26765/821.5	15M QPSK 1RB@0	0.295	0.195	24.05	25.30	0.393	Yes
Main	Right side	10mm	26765/821.5	15M QPSK 1RB@0	0.118	0.078	24.05	25.30	0.157	Yes
Main	Bottom side	10mm	26765/821.5	15M QPSK 1RB@0	0.149	0.088	24.05	25.30	0.199	Yes
Main	Front side	10mm	26765/821.5	15M QPSK 50%RB@0	0.209	0.136	23.04	24.30	0.279	Yes
Main	Back side	10mm	26765/821.5	15M QPSK 50%RB@0	0.254	0.168	23.04	24.30	0.339	Yes
Main	Right side	10mm	26765/821.5	15M QPSK 50%RB@0	0.103	0.068	23.04	24.30	0.138	Yes
Main	Bottom side	10mm	26765/821.5	15M QPSK 50%RB@0	0.134	0.079	23.04	24.30	0.179	Yes
Main	Back side	10mm	26765/821.5	15M QPSK 1RB@0	0.312	0.216	24.05	25.30	0.416	Yes
Main	Back side	10mm	26765/821.5	15M QPSK 1RB@0	0.294	0.196	24.05	25.30	0.392	Yes

Table 53: Product Specific 10-g SAR test reduction evaluation of LTE Band 26

Note: According to the table above, Product Specific 10-g SAR test is not required for this frequency band.

7.2.11 SAR measurement Results of LTE Band 38

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Main	Left cheek	/	38000/2595	20M QPSK 1RB@0	0.071	0.038	23.76	25.00	0.094	Battery 1#	/
Main	Left tilt	/	38000/2595	20M QPSK 1RB@0	0.066	0.034	23.76	25.00	0.088	Battery 1#	/
Main	Right cheek	/	38000/2595	20M QPSK 1RB@0	0.100	0.051	23.76	25.00	0.133	Battery 1#	/
Main	Right tilt	/	38000/2595	20M QPSK 1RB@0	0.050	0.025	23.76	25.00	0.067	Battery 1#	/
Main	Left cheek	/	38000/2595	20M QPSK 50%RB@25	0.054	0.026	22.83	24.00	0.071	Battery 1#	/
Main	Left tilt	/	38000/2595	20M QPSK 50%RB@25	0.042	0.022	22.83	24.00	0.055	Battery 1#	/
Main	Right cheek	/	38000/2595	20M QPSK 50%RB@25	0.067	0.035	22.83	24.00	0.088	Battery 1#	/
Main	Right tilt	/	38000/2595	20M QPSK 50%RB@25	0.039	0.019	22.83	24.00	0.051	Battery 1#	/
Main	Right cheek	/	38000/2595	20M QPSK 1RB@0	0.115	0.059	23.76	25.00	0.153	Battery 2#	Plot
Main	Right cheek	/	38000/2595	20M QPSK 1RB@0	0.067	0.035	23.76	25.00	0.089	With SIM2	/
Main	Right cheek	/	PCC:38150CH SCC:37952CH	PCC: 20M QPSK 1RB@0 SCC: 20M QPSK 15RB@85	0.074	0.037	24.31	25.00	0.087	Battery 2#	/

Table 54: Head SAR test results of LTE Band 38

7.2.12 SAR measurement Results of LTE Band 41

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Left cheek	/	40620/2593.0	20M QPSK 1RB@0	0.342	0.170	17.00	18.20	0.451	Battery 1#	/
Second	Left tilt	/	40620/2593.0	20M QPSK 1RB@0	0.381	0.188	17.00	18.20	0.502	Battery 1#	/
Second	Right cheek	/	40620/2593.0	20M QPSK 1RB@0	0.449	0.232	17.00	18.20	0.592	Battery 1#	/
Second	Right tilt	/	40620/2593.0	20M QPSK 1RB@0	0.557	0.253	17.00	18.20	0.734	Battery 1#	/
Second	Right tilt	/	39750/2506.0	20M QPSK 1RB@0	0.368	0.172	16.96	18.20	0.490	Battery 1#	/
Second	Right tilt	/	40185/2549.5	20M QPSK 1RB@0	0.405	0.182	16.98	18.20	0.536	Battery 1#	/
Second	Right tilt	/	41055/2636.5	20M QPSK 1RB@0	0.523	0.234	16.94	18.20	0.699	Battery 1#	/
Second	Right tilt	/	41490/2680	20M QPSK 1RB@0	0.532	0.237	16.95	18.20	0.709	Battery 1#	/
Second	Left cheek	/	39750/2506.0	20M QPSK 50RB@25	0.250	0.125	16.86	18.20	0.340	Battery 1#	/
Second	Left tilt	/	39750/2506.0	20M QPSK 50RB@25	0.267	0.129	16.86	18.20	0.364	Battery 1#	/
Second	Right cheek	/	39750/2506.0	20M QPSK 50RB@25	0.397	0.184	16.86	18.20	0.540	Battery 1#	/
Second	Right tilt	/	39750/2506.0	20M QPSK 50RB@25	0.421	0.208	16.86	18.20	0.573	Battery 1#	/
Second	Right tilt	/	40620/2593.0	20M QPSK 1RB@0	0.607	0.257	17.00	18.20	0.800	Battery 2#	Plot
Second	Right tilt	/	40620/2593.0	20M QPSK 1RB@0	0.549	0.235	17.00	18.20	0.724	With SIM2	/
Second	Right tilt	/	PCC:41055CH SCC:40857CH	PCC: 20M QPSK 1RB@0 SCC: 20M QPSK 15RB@85	0.519	0.236	17.58	18.20	0.599	Battery 2#	/
Main	Left cheek	/	40620/2593.0	20M QPSK 1RB@0	0.063	0.035	23.35	24.50	0.082	Battery 1#	/
Main	Left tilt	/	40620/2593.0	20M QPSK 1RB@0	0.062	0.032	23.35	24.50	0.081	Battery 1#	/
Main	Right cheek	/	40620/2593.0	20M QPSK 1RB@0	0.088	0.044	23.35	24.50	0.115	Battery 1#	/
Main	Right tilt	/	40620/2593.0	20M QPSK 1RB@0	0.059	0.031	23.35	24.50	0.077	Battery 1#	/
Main	Left cheek	/	40185/2549.5	20M QPSK 50%RB@0	0.059	0.031	22.36	23.50	0.077	Battery 1#	/
Main	Left tilt	/	40185/2549.5	20M QPSK 50%RB@0	0.041	0.021	22.36	23.50	0.053	Battery 1#	/
Main	Right cheek	/	40185/2549.5	20M QPSK 50%RB@0	0.067	0.034	22.36	23.50	0.087	Battery 1#	/
Main	Right tilt	/	40185/2549.5	20M QPSK 50%RB@0	0.045	0.021	22.36	23.50	0.059	Battery 1#	/
Main	Right cheek	/	40620/2593.0	20M QPSK 1RB@0	0.105	0.054	23.35	24.50	0.137	Battery 2#	/
Main	Right cheek	/	40620/2593.0	20M QPSK 1RB@0	0.058	0.030	23.35	24.50	0.076	With SIM2	/
Main	Right cheek	/	PCC:40185CH SCC:39987CH	PCC: 20M QPSK 1RB@0 SCC: 20M QPSK 15RB@85	0.081	0.041	23.86	24.50	0.094	Battery 2#	/

Table 55: Head SAR test results of LTE Band 41

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	15mm	40620/2593.0	20M QPSK 1RB@0	0.208	0.113	22.40	23.70	0.281	Battery 1#	/
Second	Back side	15mm	40620/2593.0	20M QPSK 1RB@0	0.275	0.156	22.40	23.70	0.371	Battery 1#	/
Second	Front side	15mm	39750/2506.0	20M QPSK 50%RB@25	0.113	0.059	21.95	23.20	0.151	Battery 1#	/
Second	Back side	15mm	39750/2506.0	20M QPSK 50%RB@25	0.162	0.085	21.95	23.20	0.216	Battery 1#	/
Second	Back side	15mm	40620/2593.0	20M QPSK 1RB@0	0.278	0.148	22.40	23.70	0.375	Battery 2#	Plot
Second	Back side	15mm	40620/2593.0	20M QPSK 1RB@0	0.170	0.090	22.40	23.70	0.229	With SIM2	/
Second	Back side	15mm	PCC:40620CH SCC:40818CH	PCC: 20M QPSK 15RB@85 SCC: 20M QPSK 1RB@0	0.269	0.143	22.88	23.70	0.325	Battery 2#	/
Main	Front side	15mm	40620/2593.0	20M QPSK 1RB@0	0.090	0.049	22.88	24.00	0.116	Battery 1#	/
Main	Back side	15mm	40620/2593.0	20M QPSK 1RB@0	0.127	0.067	22.88	24.00	0.164	Battery 1#	/
Main	Front side	15mm	40620/2593.0	20M QPSK 50%RB@0	0.078	0.043	22.35	23.50	0.102	Battery 1#	/
Main	Back side	15mm	40620/2593.0	20M QPSK 50%RB@0	0.119	0.063	22.35	23.50	0.155	Battery 1#	/
Main	Back side	15mm	40620/2593.0	20M QPSK 1RB@0	0.184	0.099	22.88	24.00	0.238	Battery 2#	/
Main	Back side	15mm	40620/2593.0	20M QPSK 1RB@0	0.118	0.063	22.88	24.00	0.153	With SIM2	/
Main	Back side	15mm	PCC:39750CH SCC:39948CH	PCC: 20M QPSK 15RB@85 SCC: 20M QPSK 1RB@0	0.178	0.096	23.37	24.00	0.206	Battery 2#	/

Table 56: Body Worn SAR test results of LTE Band 41

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	10mm	40620/2593.0	20M QPSK 1RB@0	0.098	0.050	17.00	18.20	0.129	Battery 1#	/
Second	Back side	10mm	40620/2593.0	20M QPSK 1RB@0	0.134	0.068	17.00	18.20	0.177	Battery 1#	/
Second	Left side	10mm	40620/2593.0	20M QPSK 1RB@0	0.001	0.001	17.00	18.20	0.001	Battery 1#	/
Second	Top side	10mm	40620/2593.0	20M QPSK 1RB@0	0.160	0.072	17.00	18.20	0.211	Battery 1#	/
Second	Front side	10mm	39750/2506.0	20M QPSK 50RB@25	0.068	0.033	16.86	18.20	0.093	Battery 1#	/
Second	Back side	10mm	39750/2506.0	20M QPSK 50RB@25	0.091	0.046	16.86	18.20	0.124	Battery 1#	/
Second	Left side	10mm	39750/2506.0	20M QPSK 50RB@25	0.000	0.000	16.86	18.20	0.000	Battery 1#	/
Second	Top side	10mm	39750/2506.0	20M QPSK 50RB@25	0.112	0.053	16.86	18.20	0.152	Battery 1#	/
Second	Top side	10mm	40620/2593.0	20M QPSK 1RB@0	0.165	0.079	17.00	18.20	0.218	Battery 2#	/
Second	Top side	10mm	40620/2593.0	20M QPSK 1RB@0	0.130	0.063	17.00	18.20	0.171	With SIM2	/
Second	Top side	10mm	PCC:41055CH SCC:40857CH	PCC: 20M QPSK 1RB@0 SCC: 20M QPSK 15RB@85	0.151	0.077	17.58	18.20	0.174	Battery 2#	/
Main	Front side	10mm	40620/2593.0	20M QPSK 1RB@0	0.154	0.079	20.89	22.00	0.199	Battery 1#	/
Main	Back side	10mm	40620/2593.0	20M QPSK 1RB@0	0.207	0.106	20.89	22.00	0.267	Battery 1#	/
Main	Left side	10mm	40620/2593.0	20M QPSK 1RB@0	0.001	0.001	20.89	22.00	0.001	Battery 1#	/
Main	Bottom side	10mm	40620/2593.0	20M QPSK 1RB@0	0.401	0.189	20.89	22.00	0.518	Battery 1#	/
Main	Front side	10mm	40185/2549.5	20M QPSK 50%RB@0	0.176	0.090	20.86	22.00	0.229	Battery 1#	/
Main	Back side	10mm	40185/2549.5	20M QPSK 50%RB@0	0.234	0.121	20.86	22.00	0.304	Battery 1#	/
Main	Left side	10mm	40185/2549.5	20M QPSK 50%RB@0	0.037	0.010	20.86	22.00	0.048	Battery 1#	/
Main	Bottom side	10mm	40185/2549.5	20M QPSK 50%RB@0	0.395	0.189	20.86	22.00	0.514	Battery 1#	/
Main	Bottom side	10mm	40185/2549.5	20M QPSK 50%RB@0	0.494	0.236	20.86	22.00	0.642	Battery 2#	Plot
Main	Bottom side	10mm	39750/2506.0	20M QPSK 1RB@50	0.379	0.184	20.70	22.00	0.511	Battery 2#	/
Main	Bottom side	10mm	40185/2549.5	20M QPSK 1RB@0	0.385	0.185	20.62	22.00	0.529	Battery 2#	/
Main	Bottom side	10mm	41055/2636.5	20M QPSK 1RB@0	0.283	0.137	20.84	22.00	0.370	Battery 2#	/
Main	Bottom side	10mm	41490/2680	20M QPSK 1RB@0	0.218	0.104	20.77	22.00	0.289	Battery 2#	/
Main	Bottom side	10mm	40185/2549.5	20M QPSK 50%RB@0	0.491	0.236	20.86	22.00	0.638	With SIM2	/
Main	Bottom side	10mm	PCC:41055CH SCC:40857CH	PCC: 20M QPSK 1RB@0 SCC: 20M QPSK 15RB@85	0.319	0.153	21.53	22.00	0.355	Battery 2#	/

Table 57: Hotspot SAR test results of LTE Band 41

Per KDB648474 D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Max Power Without Reduction	Scaled-up 1-g SAR (W/kg)	Product Specific 10-g SAR Exclusion
Second	Front side	10mm	40620/2593.0	20M QPSK 1RB@0	0.098	0.050	17.00	23.70	0.458	Yes
Second	Back side	10mm	40620/2593.0	20M QPSK 1RB@0	0.134	0.068	17.00	23.70	0.627	Yes
Second	Left side	10mm	40620/2593.0	20M QPSK 1RB@0	0.001	0.001	17.00	23.70	0.005	Yes
Second	Top side	10mm	40620/2593.0	20M QPSK 1RB@0	0.160	0.072	17.00	23.70	0.748	Yes
Second	Front side	10mm	39750/2506.0	20M QPSK 50RB@25	0.068	0.033	16.86	23.20	0.293	Yes
Second	Back side	10mm	39750/2506.0	20M QPSK 50RB@25	0.091	0.046	16.86	23.20	0.392	Yes
Second	Left side	10mm	39750/2506.0	20M QPSK 50RB@25	0.000	0.000	16.86	23.20	0.000	Yes
Second	Top side	10mm	39750/2506.0	20M QPSK 50RB@25	0.112	0.053	16.86	23.20	0.482	Yes
Second	Top side	10mm	40620/2593.0	20M QPSK 1RB@0	0.165	0.079	17.00	23.70	0.772	Yes
Second	Top side	10mm	40620/2593.0	20M QPSK 1RB@0	0.130	0.063	17.00	23.70	0.608	Yes
Second	Top side	10mm	PCC:41055CH SCC:40857CH	PCC: 20M QPSK 1RB@0 SCC: 20M QPSK 15RB@85	0.151	0.077	17.58	23.70	0.618	Yes
Main	Front side	10mm	40620/2593.0	20M QPSK 1RB@0	0.154	0.079	20.89	24.00	0.315	Yes
Main	Back side	10mm	40620/2593.0	20M QPSK 1RB@0	0.207	0.106	20.89	24.00	0.424	Yes
Main	Left side	10mm	40620/2593.0	20M QPSK 1RB@0	0.001	0.001	20.89	24.00	0.002	Yes
Main	Bottom side	10mm	40620/2593.0	20M QPSK 1RB@0	0.401	0.189	20.89	24.00	0.821	Yes
Main	Front side	10mm	40185/2549.5	20M QPSK 50%RB@0	0.176	0.090	20.86	23.50	0.323	Yes
Main	Back side	10mm	40185/2549.5	20M QPSK 50%RB@0	0.234	0.121	20.86	23.50	0.430	Yes
Main	Left side	10mm	40185/2549.5	20M QPSK 50%RB@0	0.037	0.010	20.86	23.50	0.068	Yes
Main	Bottom side	10mm	40185/2549.5	20M QPSK 50%RB@0	0.395	0.189	20.86	23.50	0.725	Yes
Main	Bottom side	10mm	40185/2549.5	20M QPSK 50%RB@0	0.494	0.236	20.86	23.50	0.907	Yes
Main	Bottom side	10mm	39750/2506.0	20M QPSK 1RB@50	0.379	0.184	20.70	23.50	0.722	Yes
Main	Bottom side	10mm	40185/2549.5	20M QPSK 1RB@0	0.385	0.185	20.62	23.50	0.747	Yes
Main	Bottom side	10mm	41055/2636.5	20M QPSK 1RB@0	0.283	0.137	20.84	23.50	0.522	Yes
Main	Bottom side	10mm	41490/2680	20M QPSK 1RB@0	0.218	0.104	20.77	23.50	0.409	Yes
Main	Bottom side	10mm	40185/2549.5	20M QPSK 50%RB@0	0.491	0.236	20.86	23.50	0.902	Yes
Main	Bottom side	10mm	PCC:41055CH SCC:40857CH	PCC: 20M QPSK 1RB@0 SCC: 20M QPSK 15RB@85	0.319	0.153	21.53	24.00	0.563	Yes

Table 58: Product Specific 10-g SAR test reduction evaluation of LTE Band 41

Note: According to the table above, Product Specific 10-g SAR test is not required for this frequency band.

7.2.13 SAR measurement Results of LTE Band 66

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Left cheek	/	132072/1720.0	20M QPSK 1RB@0	0.140	0.072	18.19	19.40	0.185	Battery 1#	/
Second	Left tilt	/	132072/1720.0	20M QPSK 1RB@0	0.197	0.101	18.19	19.40	0.260	Battery 1#	/
Second	Right cheek	/	132072/1720.0	20M QPSK 1RB@0	0.241	0.122	18.19	19.40	0.318	Battery 1#	/
Second	Right tilt	/	132072/1720.0	20M QPSK 1RB@0	0.297	0.138	18.19	19.40	0.392	Battery 1#	Plot
Second	Left cheek	/	132072/1720.0	20M QPSK 50%RB@25	0.158	0.081	18.25	19.40	0.206	Battery 1#	/
Second	Left tilt	/	132072/1720.0	20M QPSK 50%RB@25	0.213	0.109	18.25	19.40	0.278	Battery 1#	/
Second	Right cheek	/	132072/1720.0	20M QPSK 50%RB@25	0.263	0.133	18.25	19.40	0.343	Battery 1#	/
Second	Right tilt	/	132072/1720.0	20M QPSK 50%RB@25	0.292	0.136	18.25	19.40	0.381	Battery 1#	/
Second	Right tilt	/	132072/1720.0	20M QPSK 1RB@0	0.278	0.132	18.19	19.40	0.367	Battery 2#	/
Second	Right tilt	/	132072/1720.0	20M QPSK 1RB@0	0.283	0.132	18.19	19.40	0.374	With SIM2	/
Main	Left cheek	/	132322/1745.0	20M QPSK 1RB@99	0.116	0.072	22.97	24.50	0.165	Battery 1#	/
Main	Left tilt	/	132322/1745.0	20M QPSK 1RB@99	0.061	0.039	22.97	24.50	0.087	Battery 1#	/
Main	Right cheek	/	132322/1745.0	20M QPSK 1RB@99	0.118	0.068	22.97	24.50	0.168	Battery 1#	/
Main	Right tilt	/	132322/1745.0	20M QPSK 1RB@99	0.081	0.046	22.97	24.50	0.115	Battery 1#	/
Main	Right tilt	/	132322/1745	20M QPSK 1RB@99	0.076	0.045	22.97	24.50	0.108	Battery 2#	/
Main	Left cheek	/	132072/1720.0	20M QPSK 50%RB@25	0.091	0.057	22.07	23.50	0.126	Battery 1#	/
Main	Left tilt	/	132072/1720.0	20M QPSK 50%RB@25	0.053	0.033	22.07	23.50	0.074	Battery 1#	/
Main	Right cheek	/	132072/1720.0	20M QPSK 50%RB@25	0.101	0.062	22.07	23.50	0.140	Battery 1#	/
Main	Right tilt	/	132072/1720.0	20M QPSK 50%RB@25	0.055	0.032	22.07	23.50	0.076	Battery 1#	/
Main	Right cheek	/	132322/1745	20M QPSK 1RB@99	0.128	0.080	22.97	24.50	0.182	Battery 2#	/
Main	Right cheek	/	132322/1745	20M QPSK 1RB@99	0.106	0.067	22.97	24.50	0.151	With SIM2	/

Table 59: Head SAR test results of LTE Band 66

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	15mm	132072/1720.0	20M QPSK 1RB@50	0.001	0.001	19.72	20.40	0.001	Battery 1#	/
Second	Back side	15mm	132072/1720.0	20M QPSK 1RB@50	0.038	0.026	19.72	20.40	0.044	Battery 1#	/
Second	Front side	15mm	132072/1720.0	20M QPSK 50RB@50	0.001	0.001	19.86	20.40	0.001	Battery 1#	/
Second	Back side	15mm	132072/1720.0	20M QPSK 50RB@50	0.040	0.027	19.86	20.40	0.045	Battery 1#	/
Second	Back side	15mm	132072/1720.0	20M QPSK 50RB@50	0.041	0.024	19.86	20.40	0.046	Battery 2#	/
Second	Back side	15mm	132072/1720.0	20M QPSK 50RB@50	0.040	0.024	19.86	20.40	0.045	With SIM2	/
Main	Front side	15mm	132322/1745.0	20M QPSK 1RB@0	0.172	0.110	21.25	22.50	0.229	Battery 1#	/
Main	Back side	15mm	132322/1745.0	20M QPSK 1RB@0	0.361	0.185	21.25	22.50	0.481	Battery 1#	/
Main	Front side	15mm	132322/1745.0	20M QPSK 50%RB@50	0.166	0.106	21.35	22.50	0.216	Battery 1#	/
Main	Back side	15mm	132322/1745.0	20M QPSK 50%RB@50	0.358	0.168	21.35	22.50	0.467	Battery 1#	/
Main	Back side	15mm	132322/1745	20M QPSK 1RB@0	0.367	0.183	21.25	22.50	0.489	Battery 2#	Plot
Main	Back side	15mm	132322/1745	20M QPSK 1RB@0	0.353	0.175	21.25	22.50	0.471	With SIM2	/

Table 60: Body Worn SAR test results of LTE Band 66

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Second	Front side	10mm	132072/1720.0	20M QPSK 1RB@0	0.048	0.026	18.19	19.40	0.063	Battery 1#	/
Second	Back side	10mm	132072/1720.0	20M QPSK 1RB@0	0.065	0.036	18.19	19.40	0.086	Battery 1#	/
Second	Left side	10mm	132072/1720.0	20M QPSK 1RB@0	0.001	0.001	18.19	19.40	0.001	Battery 1#	/
Second	Top side	10mm	132072/1720.0	20M QPSK 1RB@0	0.084	0.042	18.19	19.40	0.111	Battery 1#	/
Second	Front side	10mm	132072/1720.0	20M QPSK 50RB@25	0.049	0.027	18.25	19.40	0.064	Battery 1#	/
Second	Back side	10mm	132072/1720.0	20M QPSK 50RB@25	0.069	0.039	18.25	19.40	0.090	Battery 1#	/
Second	Left side	10mm	132072/1720.0	20M QPSK 50RB@25	0.001	0.001	18.25	19.40	0.001	Battery 1#	/
Second	Top side	10mm	132072/1720.0	20M QPSK 50RB@25	0.107	0.054	18.25	19.40	0.139	Battery 1#	/
Second	Top side	10mm	132072/1720.0	20M QPSK 50RB@25	0.121	0.061	18.25	19.40	0.158	Battery 2#	/
Second	Top side	10mm	132072/1720.0	20M QPSK 50RB@25	0.104	0.054	18.25	19.40	0.136	With SIM2	/
Main	Front side	10mm	132322/1745.0	20M QPSK 1RB@50	0.255	0.154	20.58	22.00	0.354	Battery 1#	/
Main	Back side	10mm	132322/1745.0	20M QPSK 1RB@50	0.328	0.192	20.58	22.00	0.455	Battery 1#	/
Main	Left side	10mm	132322/1745.0	20M QPSK 1RB@50	0.088	0.048	20.58	22.00	0.122	Battery 1#	/
Main	Bottom side	10mm	132322/1745.0	20M QPSK 1RB@50	0.424	0.229	20.58	22.00	0.588	Battery 1#	/
Main	Front side	10mm	132322/1745.0	20M QPSK 50%RB@0	0.262	0.157	20.62	22.00	0.360	Battery 1#	/
Main	Back side	10mm	132322/1745.0	20M QPSK 50%RB@0	0.323	0.189	20.62	22.00	0.444	Battery 1#	/
Main	Left side	10mm	132322/1745.0	20M QPSK 50%RB@0	0.087	0.047	20.62	22.00	0.120	Battery 1#	/
Main	Bottom side	10mm	132322/1745.0	20M QPSK 50%RB@0	0.438	0.236	20.62	22.00	0.602	Battery 1#	/
Main	Bottom side	10mm	132322/1745	20M QPSK 50%RB@0	0.501	0.248	20.62	22.00	0.688	Battery 2#	Plot
Main	Bottom side	10mm	132322/1745	20M QPSK 50%RB@0	0.496	0.270	20.62	22.00	0.682	With SIM2	/

Table 61: Hotspot SAR test results of LTE Band 66

Per KDB648474 D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Conducted Power (dBm)	Max Power Without Reduction	Scaled-up 1-g SAR (W/kg)	Product Specific 10-g SAR Exclusion
Second	Front side	10mm	132072/1720.0	20M QPSK 1RB@0	0.048	0.026	18.19	20.40	0.080	Yes
Second	Back side	10mm	132072/1720.0	20M QPSK 1RB@0	0.065	0.036	18.19	20.40	0.108	Yes
Second	Left side	10mm	132072/1720.0	20M QPSK 1RB@0	0.001	0.001	18.19	20.40	0.002	Yes
Second	Top side	10mm	132072/1720.0	20M QPSK 1RB@0	0.084	0.042	18.19	20.40	0.140	Yes
Second	Front side	10mm	132072/1720.0	20M QPSK 50RB@25	0.049	0.027	18.25	20.40	0.080	Yes
Second	Back side	10mm	132072/1720.0	20M QPSK 50RB@25	0.069	0.039	18.25	20.40	0.113	Yes
Second	Left side	10mm	132072/1720.0	20M QPSK 50RB@25	0.001	0.001	18.25	20.40	0.002	Yes
Second	Top side	10mm	132072/1720.0	20M QPSK 50RB@25	0.107	0.054	18.25	20.40	0.176	Yes
Second	Top side	10mm	132072/1720.0	20M QPSK 50RB@25	0.121	0.061	18.25	20.40	0.199	Yes
Second	Top side	10mm	132072/1720.0	20M QPSK 50RB@25	0.104	0.054	18.25	20.40	0.171	Yes
Main	Front side	10mm	132322/1745.0	20M QPSK 1RB@50	0.255	0.154	20.58	22.50	0.397	Yes
Main	Back side	10mm	132322/1745.0	20M QPSK 1RB@50	0.328	0.192	20.58	22.50	0.510	Yes
Main	Left side	10mm	132322/1745.0	20M QPSK 1RB@50	0.088	0.048	20.58	22.50	0.137	Yes
Main	Bottom side	10mm	132322/1745.0	20M QPSK 1RB@50	0.424	0.229	20.58	22.50	0.660	Yes
Main	Front side	10mm	132322/1745.0	20M QPSK 50%RB@0	0.262	0.157	20.62	22.50	0.404	Yes
Main	Back side	10mm	132322/1745.0	20M QPSK 50%RB@0	0.323	0.189	20.62	22.50	0.498	Yes
Main	Left side	10mm	132322/1745.0	20M QPSK 50%RB@0	0.087	0.047	20.62	22.50	0.134	Yes
Main	Bottom side	10mm	132322/1745.0	20M QPSK 50%RB@0	0.438	0.236	20.62	22.50	0.675	Yes
Main	Bottom side	10mm	132322/1745	20M QPSK 50%RB@0	0.501	0.248	20.62	22.50	0.772	Yes
Main	Bottom side	10mm	132322/1745	20M QPSK 50%RB@0	0.496	0.270	20.62	22.50	0.765	Yes

Table 62: Product Specific 10-g SAR test reduction evaluation of LTE Band 66

Note: According to the table above, Product Specific 10-g SAR test is not required for this frequency band.

7.2.14 SAR measurement Results of 2.4G Wi-Fi

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Duty Cycle	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Core0	Left cheek	/	6/2437	802.11b	0.257	0.112	99%	14.92	15.50	0.297	Battery 1#	/
Core0	Left tilt	/	6/2437	802.11b	0.240	0.108	99%	14.92	15.50	0.277	Battery 1#	/
Core0	Right cheek	/	6/2437	802.11b	0.140	0.075	99%	14.92	15.50	0.162	Battery 1#	/
Core0	Right tilt	/	6/2437	802.11b	0.142	0.073	99%	14.92	15.50	0.164	Battery 1#	/
Core0	Left cheek	/	6/2437	802.11b	0.312	0.151	99%	14.92	15.50	0.360	Battery 2#	/
Core1	Left cheek	/	6/2437	802.11b	0.172	0.068	99%	14.35	15.50	0.226	Battery 1#	/
Core1	Left tilt	/	6/2437	802.11b	0.063	0.029	99%	14.35	15.50	0.083	Battery 1#	/
Core1	Right cheek	/	6/2437	802.11b	0.048	0.024	99%	14.35	15.50	0.063	Battery 1#	/
Core1	Right tilt	/	6/2437	802.11b	0.001	0.001	99%	14.35	15.50	0.001	Battery 1#	/
Core1	Left cheek	/	6/2437	802.11b	0.179	0.087	99%	14.35	15.50	0.236	Battery 2#	/

Table 63: Head SAR test results of 2.4G Wi-Fi

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Duty Cycle	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Core0	Front side	15mm	6/2437	802.11b	0.040	0.022	99%	17.93	18.50	0.046	Battery 1#	/
Core0	Back side	15mm	6/2437	802.11b	0.089	0.047	99%	17.93	18.50	0.103	Battery 1#	/
Core0	Back side	15mm	6/2437	802.11b	0.066	0.033	99%	17.93	18.50	0.076	Battery 2#	/
Core1	Front side	15mm	6/2437	802.11b	0.001	0.001	99%	17.55	18.50	0.001	Battery 1#	/
Core1	Back side	15mm	6/2437	802.11b	0.095	0.046	99%	17.55	18.50	0.120	Battery 1#	Plot
Core1	Back side	15mm	6/2437	802.11b	0.072	0.029	99%	17.55	18.50	0.091	Battery 2#	/

Table 64: Body Worn SAR test results of 2.4G Wi-Fi

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Duty Cycle	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Core0	Front side	10mm	6/2437	802.11b	0.090	0.047	99%	17.93	18.50	0.104	Battery 1#	/
Core0	Back side	10mm	6/2437	802.11b	0.243	0.117	99%	17.93	18.50	0.280	Battery 1#	Plot
Core0	Right side	10mm	6/2437	802.11b	0.010	0.001	99%	17.93	18.50	0.012	Battery 1#	/
Core0	Top side	10mm	6/2437	802.11b	0.134	0.070	99%	17.93	18.50	0.154	Battery 1#	/
Core0	Back side	10mm	6/2437	802.11b	0.142	0.071	99%	17.93	18.50	0.164	Battery 2#	/
Core1	Front side	10mm	6/2437	802.11b	0.069	0.032	99%	17.55	18.50	0.087	Battery 1#	/
Core1	Back side	10mm	6/2437	802.11b	0.175	0.082	99%	17.55	18.50	0.220	Battery 1#	/
Core1	Right side	10mm	6/2437	802.11b	0.155	0.066	99%	17.55	18.50	0.195	Battery 1#	/
Core1	Top side	10mm	6/2437	802.11b	0.001	0.001	99%	17.55	18.50	0.001	Battery 1#	/
Core1	Back side	10mm	6/2437	802.11b	0.189	0.088	99%	17.55	18.50	0.238	Battery 2#	/

Table 65: Hotspot SAR test results of 2.4G Wi-Fi

Per KDB648474 D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Duty Cycle	Conducted Power (dBm)	Max Power Without Reduction	Scaled-up 1-g SAR (W/kg)	Product Specific 10-g SAR Exclusion
Core0	Front side	10mm	6/2437	802.11b	0.090	0.047	99%	17.93	18.50	0.103	Yes
Core0	Back side	10mm	6/2437	802.11b	0.243	0.117	99%	17.93	18.50	0.277	Yes
Core0	Right side	10mm	6/2437	802.11b	0.010	0.001	99%	17.93	18.50	0.011	Yes
Core0	Top side	10mm	6/2437	802.11b	0.134	0.070	99%	17.93	18.50	0.153	Yes
Core0	Back side	10mm	6/2437	802.11b	0.142	0.071	99%	17.93	18.50	0.162	Yes
Core1	Front side	10mm	6/2437	802.11b	0.069	0.032	99%	17.55	18.50	0.086	Yes
Core1	Back side	10mm	6/2437	802.11b	0.175	0.082	99%	17.55	18.50	0.218	Yes
Core1	Right side	10mm	6/2437	802.11b	0.155	0.066	99%	17.55	18.50	0.193	Yes
Core1	Top side	10mm	6/2437	802.11b	0.001	0.001	99%	17.55	18.50	0.001	Yes
Core1	Back side	10mm	6/2437	802.11b	0.189	0.088	99%	17.55	18.50	0.235	Yes

Table 66: Product Specific 10-g SAR test reduction evaluation of 2.4G Wi-Fi

Note: According to the table above, Product Specific 10-g SAR test is not required for this frequency band.

For this device, simultaneous transmission provisions in KDB Publication 447498 is used to determine simultaneous transmission SAR test exclusion for Wi-Fi MIMO. If the sum of 1-g SAR single transmission SAR measurement is <1.6W/kg, no additional SAR measurements for MIMO are required(Refer to section 7.3 for details).

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Duty Cycle	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Core0	Left cheek	/	6/2437	802.11n(40M)	0.341	0.148	99%	14.46	15.50	0.438	Battery 1#	Plot
Core0	Left tilt	/	6/2437	802.11n(40M)	0.199	0.093	99%	14.46	15.50	0.255	Battery 1#	/
Core0	Right cheek	/	6/2437	802.11n(40M)	0.147	0.080	99%	14.46	15.50	0.189	Battery 1#	/
Core0	Right tilt	/	6/2437	802.11n(40M)	0.144	0.075	99%	14.46	15.50	0.185	Battery 1#	/
Core0	Left cheek	/	6/2437	802.11n(40M)	0.319	0.152	99%	14.46	15.50	0.409	Battery 2#	/
Core1	Left cheek	/	6/2437	802.11n(40M)	0.126	0.059	99%	14.13	15.50	0.174	Battery 1#	/
Core1	Left tilt	/	6/2437	802.11n(40M)	0.044	0.020	99%	14.13	15.50	0.061	Battery 1#	/
Core1	Right cheek	/	6/2437	802.11n(40M)	0.001	0.001	99%	14.13	15.50	0.001	Battery 1#	/
Core1	Right tilt	/	6/2437	802.11n(40M)	0.039	0.011	99%	14.13	15.50	0.054	Battery 1#	/
Core1	Left cheek	/	6/2437	802.11n(40M)	0.218	0.090	99%	14.13	15.50	0.302	Battery 2#	/

Table 67: Head SAR test results of 2.4G Wi-Fi(MIMO)

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Duty Cycle	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Core0	Front side	15mm	6/2437	802.11n(40M)	0.049	0.027	99%	16.80	18.00	0.065	Battery 1#	/
Core0	Back side	15mm	6/2437	802.11n(40M)	0.054	0.025	99%	16.80	18.00	0.072	Battery 1#	/
Core0	Back side	15mm	6/2437	802.11n(40M)	0.089	0.049	99%	16.80	18.00	0.119	Battery 2#	/
Core1	Front side	15mm	6/2437	802.11n(20M)	0.049	0.026	99%	16.42	18.00	0.071	Battery 1#	/
Core1	Back side	15mm	6/2437	802.11n(20M)	0.071	0.034	99%	16.42	18.00	0.103	Battery 1#	/
Core1	Back side	15mm	6/2437	802.11n(20M)	0.073	0.035	99%	16.42	18.00	0.106	Battery 2#	/

Table 68: Body Worn SAR test results of 2.4G Wi-Fi(MIMO)

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Duty Cycle	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Core0	Front side	10mm	6/2437	802.11n(40M)	0.099	0.053	99%	16.80	18.00	0.132	Battery 1#	/
Core0	Back side	10mm	6/2437	802.11n(40M)	0.179	0.081	99%	16.80	18.00	0.238	Battery 1#	/
Core0	Right side	10mm	6/2437	802.11n(40M)	0.122	0.060	99%	16.80	18.00	0.162	Battery 1#	/
Core0	Top side	10mm	6/2437	802.11n(40M)	0.122	0.064	99%	16.80	18.00	0.162	Battery 1#	/
Core0	Back side	10mm	6/2437	802.11n(40M)	0.176	0.080	99%	16.80	18.00	0.234	Battery 2#	/
Core1	Front side	10mm	6/2437	802.11n(20M)	0.101	0.053	99%	16.42	18.00	0.147	Battery 1#	/
Core1	Back side	10mm	6/2437	802.11n(20M)	0.190	0.085	99%	16.42	18.00	0.276	Battery 1#	/
Core1	Right side	10mm	6/2437	802.11n(20M)	0.120	0.057	99%	16.42	18.00	0.174	Battery 1#	/
Core1	Top side	10mm	6/2437	802.11n(20M)	0.119	0.062	99%	16.42	18.00	0.173	Battery 1#	/
Core1	Back side	10mm	6/2437	802.11n(20M)	0.185	0.081	99%	16.42	18.00	0.269	Battery 2#	/

Table 69: Hotspot SAR test results of 2.4G Wi-Fi(MIMO)

Per KDB648474 D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Duty Cycle	Conducted Power (dBm)	Max Power Without Reduction	Scaled-up 1-g SAR (W/kg)	Product Specific 10-g SAR Exclusion
Core0	Front side	10mm	6/2437	802.11n(40M)	0.099	0.053	99%	16.80	18.50	0.146	Yes
Core0	Back side	10mm	6/2437	802.11n(40M)	0.179	0.081	99%	16.80	18.50	0.265	Yes
Core0	Right side	10mm	6/2437	802.11n(40M)	0.122	0.060	99%	16.80	18.50	0.180	Yes
Core0	Top side	10mm	6/2437	802.11n(40M)	0.122	0.064	99%	16.80	18.50	0.180	Yes
Core0	Back side	10mm	6/2437	802.11n(40M)	0.176	0.080	99%	16.80	18.50	0.260	Yes
Core1	Front side	10mm	6/2437	802.11n(20M)	0.101	0.053	99%	16.42	18.50	0.163	Yes
Core1	Back side	10mm	6/2437	802.11n(20M)	0.190	0.085	99%	16.42	18.50	0.307	Yes
Core1	Right side	10mm	6/2437	802.11n(20M)	0.120	0.057	99%	16.42	18.50	0.194	Yes
Core1	Top side	10mm	6/2437	802.11n(20M)	0.119	0.062	99%	16.42	18.50	0.192	Yes
Core1	Back side	10mm	6/2437	802.11n(20M)	0.185	0.081	99%	16.42	18.50	0.299	Yes

Table 70: Product Specific 10-g SAR test reduction evaluation of 2.4G Wi-Fi(MIMO)

Note: According to the table above, Product Specific 10-g SAR test is not required for this frequency band.

7.2.15 SAR measurement Results of 5G Wi-Fi

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Duty Cycle	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Core0	Left cheek	/	54/5270	802.11n(40M)	0.528	0.179	99%	11.58	13.00	0.740	Battery 1#	/
Core0	Left tilt	/	54/5270	802.11n(40M)	0.330	0.124	99%	11.58	13.00	0.462	Battery 1#	/
Core0	Right cheek	/	54/5270	802.11n(40M)	0.035	0.007	99%	11.58	13.00	0.049	Battery 1#	/
Core0	Right tilt	/	54/5270	802.11n(40M)	0.001	0.001	99%	11.58	13.00	0.001	Battery 1#	/
Core0	Left cheek	/	54/5270	802.11n(40M)	0.444	0.161	99%	11.58	13.00	0.622	Battery 2#	/
Core0	Left cheek	/	110/5550	802.11n(40M)	0.454	0.175	99%	11.90	13.00	0.591	Battery 1#	/
Core0	Left tilt	/	110/5550	802.11n(40M)	0.416	0.148	99%	11.90	13.00	0.541	Battery 1#	/
Core0	Right cheek	/	110/5550	802.11n(40M)	0.298	0.117	99%	11.90	13.00	0.388	Battery 1#	/
Core0	Right tilt	/	110/5550	802.11n(40M)	0.320	0.123	99%	11.90	13.00	0.416	Battery 1#	/
Core0	Left cheek	/	110/5550	802.11n(40M)	0.409	0.160	99%	11.90	13.00	0.532	Battery 2#	/
Core0	Left cheek	/	159/5795	802.11n(40M)	0.462	0.177	99%	12.05	13.00	0.581	Battery 1#	/
Core0	Left cheek	/	159/5795	802.11n(40M)	0.601	0.189	99%	12.05	13.00	0.756	Battery 1#	Plot
Core0	Left tilt	/	159/5795	802.11n(40M)	0.298	0.115	99%	12.05	13.00	0.375	Battery 1#	/
Core0	Right cheek	/	159/5795	802.11n(40M)	0.359	0.136	99%	12.05	13.00	0.451	Battery 1#	/
Core0	Right tilt	/	159/5795	802.11n(40M)	0.347	0.139	99%	12.05	13.00	0.436	Battery 1#	/
Core0	Left cheek	/	159/5795	802.11n(40M)	0.449	0.179	99%	11.93	13.00	0.580	Battery 2#	/
Core1	Left cheek	/	54/5270	802.11n(40M)	0.107	0.036	99%	11.92	13.00	0.139	Battery 1#	/
Core1	Left tilt	/	54/5270	802.11n(40M)	0.041	0.009	99%	11.92	13.00	0.053	Battery 1#	/
Core1	Right cheek	/	54/5270	802.11n(40M)	0.037	0.014	99%	11.92	13.00	0.048	Battery 1#	/
Core1	Right tilt	/	54/5270	802.11n(40M)	0.001	0.001	99%	11.92	13.00	0.001	Battery 1#	/
Core1	Left cheek	/	54/5270	802.11n(40M)	0.093	0.036	99%	11.92	13.00	0.120	Battery 2#	/
Core1	Left cheek	/	118/5590	802.11n(40M)	0.119	0.041	99%	11.71	13.00	0.162	Battery 1#	/
Core1	Left tilt	/	118/5590	802.11n(40M)	0.071	0.025	99%	11.71	13.00	0.097	Battery 1#	/
Core1	Right cheek	/	118/5590	802.11n(40M)	0.052	0.019	99%	11.71	13.00	0.071	Battery 1#	/
Core1	Right tilt	/	118/5590	802.11n(40M)	0.035	0.008	99%	11.71	13.00	0.048	Battery 1#	/
Core1	Left cheek	/	118/5590	802.11n(40M)	0.110	0.041	99%	11.71	13.00	0.150	Battery 2#	/
Core1	Left cheek	/	159/5795	802.11n(40M)	0.095	0.030	99%	11.82	13.00	0.126	Battery 1#	/
Core1	Left tilt	/	159/5795	802.11n(40M)	0.058	0.014	99%	11.82	13.00	0.077	Battery 1#	/
Core1	Right cheek	/	159/5795	802.11n(40M)	0.060	0.021	99%	11.82	13.00	0.080	Battery 1#	/
Core1	Right tilt	/	159/5795	802.11n(40M)	0.037	0.011	99%	11.82	13.00	0.049	Battery 1#	/
Core1	Left cheek	/	159/5795	802.11n(40M)	0.076	0.024	99%	11.82	13.00	0.101	Battery 2#	/

Table 71: Head SAR test results of 5G Wi-Fi



Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Duty Cycle	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Core0	Front side	15mm	60/5300	802.11a	0.120	0.049	99%	14.51	16.00	0.171	Battery 1#	/
Core0	Back side	15mm	60/5300	802.11a	0.239	0.098	99%	14.51	16.00	0.340	Battery 1#	/
Core0	Back side	15mm	60/5300	802.11a	0.169	0.068	99%	14.51	16.00	0.241	Battery 2#	/
Core0	Front side	15mm	110/5550	802.11n(40M)	0.175	0.075	99%	14.93	16.00	0.226	Battery 1#	/
Core0	Back side	15mm	110/5550	802.11n(40M)	0.495	0.192	99%	14.93	16.00	0.640	Battery 1#	Plot
Core0	Back side Simultaneous Transmission With 2/3/4G	15mm	110/5550	802.11n(40M)	0.206	0.082	99%	11.82	13.00	0.273	Battery 1#	/
Core0	Back side	15mm	110/5550	802.11n(40M)	0.302	0.122	99%	14.93	16.00	0.390	Battery 2#	/
Core0	Front side	15mm	157/5785	802.11a	0.192	0.078	99%	14.93	16.00	0.248	Battery 1#	/
Core0	Back side	15mm	157/5785	802.11a	0.277	0.112	99%	14.93	16.00	0.358	Battery 1#	/
Core0	Back side	15mm	157/5785	802.11a	0.290	0.117	99%	14.93	16.00	0.375	Battery 2#	/
Core1	Front side	15mm	56/5280	802.11a	0.069	0.018	99%	15.11	16.00	0.086	Battery 1#	/
Core1	Back side	15mm	56/5280	802.11a	0.075	0.018	99%	15.11	16.00	0.093	Battery 1#	/
Core1	Back side	15mm	56/5280	802.11a	0.079	0.019	99%	15.11	16.00	0.098	Battery 2#	/
Core1	Front side	15mm	126/5630	802.11n(40M)	0.080	0.019	99%	14.80	16.00	0.107	Battery 1#	/
Core1	Back side	15mm	126/5630	802.11n(40M)	0.096	0.027	99%	14.80	16.00	0.128	Battery 1#	/
Core1	Back side	15mm	126/5630	802.11n(40M)	0.091	0.026	99%	14.80	16.00	0.121	Battery 2#	/
Core1	Front side	15mm	157/5785	802.11a	0.079	0.020	99%	14.87	16.00	0.104	Battery 1#	/
Core1	Back side	15mm	157/5785	802.11a	0.116	0.029	99%	14.87	16.00	0.152	Battery 1#	/
Core1	Back side	15mm	157/5785	802.11a	0.110	0.032	99%	14.87	16.00	0.144	Battery 2#	/

Table 72: Body Worn SAR test results of 5G Wi-Fi

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Duty Cycle	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Core0	Front side	10mm	157/5785	802.11a	0.265	0.101	99%	14.93	16.00	0.342	Battery 1#	/
Core0	Back side	10mm	157/5785	802.11a	0.642	0.233	99%	14.93	16.00	0.830	Battery 1#	Plot
Core0	Back side	10mm	153/5765	802.11a	0.605	0.220	99%	14.78	16.00	0.809	Battery 1#	/
Core0	Back side	10mm	161/5805	802.11a	0.546	0.202	99%	14.71	16.00	0.742	Battery 1#	/
Core0	Back side Simultaneous Transmission with 2/3/4G	10mm	157/5785	802.11a	0.225	0.078	99%	11.78	13.00	0.301	Battery 1#	/
Core0	Top side	10mm	157/5785	802.11a	0.284	0.110	99%	14.93	16.00	0.367	Battery 1#	/
Core0	Back side	10mm	157/5785	802.11a	0.533	0.194	99%	14.93	16.00	0.689	Battery 2#	/
Core1	Front side	10mm	157/5785	802.11a	0.071	0.020	99%	14.87	16.00	0.093	Battery 1#	/
Core1	Back side	10mm	157/5785	802.11a	0.177	0.048	99%	14.87	16.00	0.232	Battery 1#	/
Core1	Right side	10mm	157/5785	802.11a	0.235	0.084	99%	14.87	16.00	0.308	Battery 1#	/
Core1	Top side	10mm	157/5785	802.11a	0.080	0.015	99%	14.87	16.00	0.105	Battery 1#	/
Core1	Right side	10mm	157/5785	802.11a	0.213	0.086	99%	14.87	16.00	0.279	Battery 2#	/

Table 73: Hotspot SAR test results of 5G Wi-Fi

Note: For this device, 5G Wi-Fi U-NII-1,U-NII-2A and U-NII-2C band does not support hotspot function.

Per KDB648474 D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Duty Cycle	Conducted Power (dBm)	Max Power Without Reduction	Scaled-up 1-g SAR (W/kg)	Product Specific 10-g SAR Exclusion
Core0	Front side	10mm	157/5785	802.11a	0.265	0.101	99%	14.93	16	0.339	Yes
Core0	Back side	10mm	157/5785	802.11a	0.642	0.233	99%	14.93	16	0.821	Yes
Core0	Back side Simultaneous Transmission with 2/3/4G	10mm	157/5785	802.11a	0.225	0.078	99%	11.78	16	0.595	Yes
Core0	Top side	10mm	157/5785	802.11a	0.284	0.110	99%	14.93	16	0.363	Yes
Core0	Back side	10mm	157/5785	802.11a	0.533	0.194	99%	14.93	16	0.682	Yes
Core1	Front side	10mm	157/5785	802.11a	0.071	0.020	99%	14.87	16	0.092	Yes
Core1	Back side	10mm	157/5785	802.11a	0.177	0.048	99%	14.87	16	0.230	Yes
Core1	Right side	10mm	157/5785	802.11a	0.235	0.084	99%	14.87	16	0.305	Yes
Core1	Top side	10mm	157/5785	802.11a	0.080	0.015	99%	14.87	16	0.104	Yes
Core1	Right side	10mm	157/5785	802.11a	0.213	0.086	99%	14.87	16	0.276	Yes

Table 74: Product Specific 10-g SAR test reduction evaluation of 5G Wi-Fi

Note: According to the table above, Product Specific 10-g SAR test is not required for this frequency band(U-NII-3).

For 5G Wi-Fi U-NII-1,U-NII-2A and U-NII-2C band

For this device, since 5G Wi-Fi U-NII-1,U-NII-2A and U-NII-2C band does not support hotspot function, so Product Specific 10-g SAR were tested as below:

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Duty Cycle	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 10-g SAR (W/kg)	Accessory Information	Note
Core0	Front side	0mm	60/5300	802.11a	2.540	0.825	99%	14.51	16.00	1.174	Battery 1#	/
Core0	Back side	0mm	60/5300	802.11a	1.910	0.636	99%	14.51	16.00	0.905	Battery 1#	/
Core0	Top side	0mm	60/5300	802.11a	6.080	1.450	99%	14.51	16.00	2.064	Battery 1#	Plot
Core0	Top side	0mm	60/5300	802.11a	5.560	1.290	99%	14.51	16.00	1.836	Battery 2#	/
Core0	Top side	0mm	52/5260	802.11a	4.740	1.360	99%	14.36	16.00	2.004	Battery 1#	/
Core0	Top side	0mm	64/5320	802.11a	4.880	1.390	99%	14.37	16.00	2.044	Battery 1#	/
Core0	Front side	0mm	110/5550	802.11n(40M)	2.330	0.762	99%	14.93	16.00	0.985	Battery 1#	/
Core0	Back side	0mm	110/5550	802.11n(40M)	2.040	0.630	99%	14.93	16.00	0.814	Battery 1#	/
Core0	Top side	0mm	110/5550	802.11n(40M)	5.030	1.410	99%	14.93	16.00	1.822	Battery 1#	/
Core0	Top side	0mm	110/5550	802.11n(40M)	5.850	1.350	99%	14.93	16.00	1.745	Battery 2#	/
Core0	Top side	0mm	118/5590	802.11n(40M)	4.720	1.310	99%	14.80	16.00	1.744	Battery 1#	/
Core0	Top side	0mm	126/5630	802.11n(40M)	4.450	1.230	99%	14.65	16.00	1.695	Battery 1#	/
Core1	Front side	0mm	56/5280	802.11a	0.258	0.088	99%	15.11	16.00	0.109	Battery 1#	/
Core1	Back side	0mm	56/5280	802.11a	0.830	0.245	99%	15.11	16.00	0.304	Battery 1#	/
Core1	Right side	0mm	56/5280	802.11a	1.710	0.472	99%	15.11	16.00	0.585	Battery 1#	/
Core1	Top side	0mm	56/5280	802.11a	0.113	0.026	99%	15.11	16.00	0.032	Battery 1#	/
Core1	Right side	0mm	56/5280	802.11a	1.270	0.397	99%	15.11	16.00	0.492	Battery 2#	/
Core1	Front side	0mm	126/5630	802.11n(40M)	0.351	0.108	99%	14.80	16.00	0.144	Battery 1#	/
Core1	Back side	0mm	126/5630	802.11n(40M)	1.160	0.304	99%	14.80	16.00	0.405	Battery 1#	/
Core1	Right side	0mm	126/5630	802.11n(40M)	2.260	0.559	99%	14.80	16.00	0.744	Battery 1#	/
Core1	Top side	0mm	126/5630	802.11n(40M)	0.227	0.049	99%	14.80	16.00	0.065	Battery 1#	/
Core1	Right side	0mm	126/5630	802.11n(40M)	1.490	0.429	99%	14.80	16.00	0.571	Battery 2#	/

Table 75: Product Specific 10-g SAR test results of 5G Wi-Fi

7.2.16 SAR measurement Results of BT

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Duty Cycle	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Core0	Left cheek	/	39/2441	3DH5	0.103	0.048	77%	14.35	15.00	0.155	Battery 1#	/
Core0	Left tilt	/	39/2441	3DH5	0.076	0.035	77%	14.35	15.00	0.115	Battery 1#	/
Core0	Right cheek	/	39/2441	3DH5	0.056	0.030	77%	14.35	15.00	0.084	Battery 1#	/
Core0	Right tilt	/	39/2441	3DH5	0.068	0.035	77%	14.35	15.00	0.103	Battery 1#	/
Core0	Left cheek	/	39/2441	3DH5	0.113	0.050	77%	14.35	15.00	0.170	Battery 2#	Plot
Core1	Left cheek	/	39/2441	3DH5	0.041	0.018	77%	12.58	13.00	0.059	Battery 1#	/
Core1	Left tilt	/	39/2441	3DH5	0.001	0.001	77%	12.58	13.00	0.001	Battery 1#	/
Core1	Right cheek	/	39/2441	3DH5	0.001	0.001	77%	12.58	13.00	0.001	Battery 1#	/
Core1	Right tilt	/	39/2441	3DH5	0.001	0.001	77%	12.58	13.00	0.001	Battery 1#	/
Core1	Left cheek	/	39/2441	3DH5	0.068	0.026	77%	12.58	13.00	0.098	Battery 2#	/

Table 76: Head SAR test results of BT

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Duty Cycle	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Core0	Front side	15mm	39/2441	3DH5	0.001	0.001	77%	14.35	15.00	0.002	Battery 1#	/
Core0	Back side	15mm	39/2441	3DH5	0.001	0.001	77%	14.35	15.00	0.002	Battery 1#	/
Core0	Right side	15mm	39/2441	3DH5	0.001	0.001	77%	14.35	15.00	0.002	Battery 1#	/
Core0	Top side	15mm	39/2441	3DH5	0.001	0.001	77%	14.35	15.00	0.002	Battery 1#	/
Core0	Back side	15mm	39/2441	3DH5	0.013	0.005	77%	14.35	15.00	0.019	Battery 2#	Plot

Table 77: Body Worn SAR test results of BT

Antenna	Test Position	Dist.	Test Channel /Freq.(MHz)	Test Mode	Measured 1-g SAR (W/kg)	Measured 10-g SAR (W/kg)	Duty Cycle	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Accessory Information	Note
Core0	Front side	10mm	39/2441	3DH5	0.001	0.001	77%	14.35	15.00	0.002	Battery 1#	/
Core0	Back side	10mm	39/2441	3DH5	0.045	0.022	77%	14.35	15.00	0.068	Battery 1#	/
Core0	Right side	10mm	39/2441	3DH5	0.001	0.001	77%	14.35	15.00	0.002	Battery 1#	/
Core0	Top side	10mm	39/2441	3DH5	0.001	0.001	77%	14.35	15.00	0.002	Battery 1#	/
Core0	Back side	10mm	39/2441	3DH5	0.046	0.022	77%	14.35	15.00	0.069	Battery 2#	/
Core0	Back side	10mm	39/2441	3DH5	0.064	0.030	77%	14.35	15.00	0.097	Battery 2#	Plot
Core1	Front side	10mm	39/2441	3DH5	0.001	0.001	77%	12.58	13.00	0.001	Battery 1#	/
Core1	Back side	10mm	39/2441	3DH5	0.054	0.024	77%	12.58	13.00	0.077	Battery 1#	/
Core1	Right side	10mm	39/2441	3DH5	0.054	0.023	77%	12.58	13.00	0.077	Battery 1#	/
Core1	Top side	10mm	39/2441	3DH5	0.001	0.001	77%	12.58	13.00	0.001	Battery 1#	/
Core1	Back side	10mm	39/2441	3DH5	0.056	0.027	77%	12.58	13.00	0.080	Battery 2#	/
Core1	Back side	10mm	39/2441	3DH5	0.064	0.028	77%	12.58	13.00	0.092	Battery 2#	/

Table 78: Hotspot SAR test results of BT

7.3 Multiple Transmitter Evaluation

The detailed location of the Tx antennas inside the device refers to Appendix.

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

Antenna	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
Ant1:Main ant-LB	YES	YES	NO	YES	NO	YES
Ant2: Main ant-MHB	YES	YES	YES	NO	NO	YES
Ant3: Second ant-LB	YES	YES	YES	NO	NO	NO
Ant4: Second ant-MHB	YES	YES	YES	NO	YES	NO
Ant5: 5G Wi-Fi Core0	YES	YES	NO	NO	YES	NO
Ant6: 2.4G Wi-Fi Core0, BT Core 0	YES	YES	NO	YES	YES	NO
Ant7: 2.4G/5G Wi-Fi Core1, BT Core1	YES	YES	NO	YES	YES	NO

Table 79: Sides for Hotspot/ Product specific 10g SAR testing

Note:

- 1) Per KDB 648474 D04, because the diagonal distance of this device is $\geq 160\text{mm}$, so it is a phablet.
- 2) 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.

7.3.1 Stand-alone SAR test exclusion

Per FCC KDB 447498 D01, 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:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot \sqrt{f(\text{GHz})} \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g SAR, where:

- $f(\text{GHz})$ 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 Core1	Body-worn	13.00	19.95	15	2.480	2.09	3.00	Yes

Table 80: 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:

$(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot$

$\sqrt{f(\text{GHz})/x}$ 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.

Per KDB 447498 D01, the approximate SAR values were estimated at selected frequencies, test separation distances and power levels for determining simultaneous transmission SAR test exclusion when standalone SAR is not required.

Mode	Position	P_{max} (dBm)*	P_{max} (mW)	Distance (mm)	f (GHz)	X	Estimated SAR (W/kg)*
BT Core1	Body-worn	13.00	19.95	15	2.480	7.50	0.279

Table 81: Estimated SAR calculation for BT

Note:

1) * - maximum possible output power declared by manufacturer

7.3.2 Simultaneous Transmission Possibilities

The Simultaneous Transmission Possibilities of this device are as below:

NO.	Simultaneous Tx Combination	Head	Body	Hotspot	Extremity
1	GSM Voice(main-ant) + BT(Core0/Core1)	Yes	Yes	N/A	Yes
2	GSM DATA(main-ant) + BT(Core0/Core1)	N/A	N/A	Yes	Yes
3	GSM Voice(second-ant) + BT(Core0/Core1)	Yes	Yes	N/A	Yes
4	GSM DATA (second-ant)+ BT(Core0/Core1)	N/A	N/A	Yes	Yes
5	GSM Voice(main-ant) + 2.4G Wi-Fi(Core0/Core1)/ Wi- Fi 2.4G CDD/MIMO	Yes	Yes	N/A	Yes
6	GSM Voice(main-ant) + 5G Wi-Fi(Core0/Core1) / Wi- Fi 5G CDD/MIMO	Yes	Yes	N/A	Yes
7	GSM DATA(main-ant) + 2.4G Wi-Fi(Core0/Core1) / Wi- Fi 2.4G CDD/MIMO	N/A	N/A	Yes	Yes
8	GSM DATA(main-ant) + 5G Wi-Fi(Core0/Core1) / Wi- Fi 5G CDD/MIMO	N/A	N/A	Yes	Yes
9	GSM Voice(second-ant) + 2.4G Wi-Fi(Core0/Core1) / Wi- Fi 2.4G CDD/MIMO	Yes	Yes	N/A	Yes
10	GSM Voice(second-ant) + 5G Wi-Fi(Core0/Core1) / Wi- Fi 5G CDD/MIMO	Yes	Yes	N/A	Yes
11	GSM DATA(second-ant) + 2.4G Wi-Fi(Core0/Core1) / Wi- Fi 2.4G CDD/MIMO	N/A	N/A	Yes	Yes
12	GSM DATA(second-ant) + 5G Wi-Fi(Core0/Core1) / Wi- Fi 5G CDD/MIMO	N/A	N/A	Yes	Yes
13	UMTS (main-ant) + BT(Core0/Core1)	Yes	Yes	Yes	Yes
14	UMTS (second-ant) + BT(Core0/Core1)	Yes	Yes	Yes	Yes
15	UMTS (main-ant) + 2.4G Wi-Fi(Core0/Core1) / Wi- Fi 2.4G CDD/MIMO	Yes	Yes	Yes	Yes
16	UMTS (main-ant) + 5G Wi-Fi(Core0/Core1) / Wi- Fi 5G CDD/MIMO	Yes	Yes	Yes	Yes
17	UMTS (second-ant) + 2.4G Wi-Fi(Core0/Core1) / Wi- Fi 2.4G CDD/MIMO	Yes	Yes	Yes	Yes
18	UMTS (second-ant) + 5G Wi-Fi(Core0/Core1) / Wi- Fi 5G CDD/MIMO	Yes	Yes	Yes	Yes
19	LTE (main-ant) + 2.4G Wi-Fi(Core0/Core1) / Wi- Fi 2.4G CDD/MIMO	Yes	Yes	Yes	Yes
20	LTE (main-ant) + 5G Wi-Fi(Core0/Core1) / Wi- Fi 5G CDD/MIMO	Yes	Yes	Yes	Yes
21	LTE (main-ant) + BT(Core0/Core1)	Yes	Yes	Yes	Yes
22	LTE (second-ant) + 2.4G Wi-Fi(Core0/Core1) / Wi- Fi 2.4G CDD/MIMO	Yes	Yes	Yes	Yes
23	LTE (second-ant) + 5G Wi-Fi(Core0/Core1) / Wi- Fi 5G CDD/MIMO	Yes	Yes	Yes	Yes
24	LTE (second-ant) + BT(Core0/Core1)	Yes	Yes	Yes	Yes
25	GSM Voice(main-ant) + 5G Wi-Fi(Core0/Core1) / Wi- Fi 5G CDD/MIMO+ BT(Core0/Core1)	Yes	Yes	N/A	Yes
26	GSM DATA(main-ant) + 5G Wi-Fi(Core0/Core1) / Wi- Fi 5G CDD/MIMO+ BT(Core0/Core1)	N/A	N/A	Yes	Yes
27	GSM Voice(second-ant) + 5G Wi-Fi(Core0/Core1) / Wi- Fi 5G CDD/MIMO+ BT(Core0/Core1)	Yes	Yes	N/A	Yes
28	GSM DATA (second-ant) + 5G Wi-Fi(Core0/Core1) / Wi- Fi 5G CDD/MIMO+ BT(Core0/Core1)	N/A	N/A	Yes	Yes
29	UMTS (main-ant) +5G Wi-Fi(Core0/Core1) / Wi- Fi 5G CDD/MIMO+ BT(Core0/Core1)	Yes	Yes	Yes	Yes
30	UMTS (second-ant) + 5G Wi-Fi(Core0/Core1) / Wi- Fi 5G CDD/MIMO+ BT(Core0/Core1)	Yes	Yes	Yes	Yes
31	LTE (main-ant) + 5G Wi-Fi(Core0/Core1) / Wi- Fi 5G CDD/MIMO+ BT(Core0/Core1)	Yes	Yes	Yes	Yes
32	LTE (second-ant) + 5G Wi-Fi(Core0/Core1) / Wi- Fi 5G CDD/MIMO+ BT(Core0/Core1)	Yes	Yes	Yes	Yes

Table 82: Simultaneous Transmission Possibilities

Note:

- 1) 2G/3G/4G Main antenna and second antenna can't transmit simultaneously.
- 2) 2.4G Wi-Fi can't transmit simultaneously with Bluetooth.
- 3) 5G Wi-Fi can't transmit simultaneously with 2.4G Wi-Fi.

- 4) 2.4G Wi-Fi has two TX antennas. 2.4G Wi-Fi 802.11g/n/ax support 2*2 CDD/MIMO function.
- 5) 5G Wi-Fi has two TX antennas. 5G Wi-Fi 802.11 a/n/ac/ax support 2*2 CDD/MIMO function.
- 6) The device does not support DTM function.
- 7) VoLTE or pre-installed VOIP applications are considered.
- 8) The device supports Vo-Wi-Fi function.
- 9) For 5G Wi-Fi, U-NII-1(20MHz,40MHz,80MHz bandwith),U-NII-2A(20MHz,40MHz,80MHz bandwith) and U-NII-2C(20MHz,40MHz,80MHz,160MHz)bands does not support hotspot function.

7.3.3 SAR Summation Scenario

The Max Σ SAR is calculated as below table. The color grounding SAR test data in the following summed SAR tables represent that the additional SAR test results in simultaneous transmission fixed power reduction scenario are used to ensure simultaneous transmission SAR test exclusion. For the other SAR test data in the summed SAR tables, the more conservative stand-alone SAR test results are used.

Band	Head				Body-worn		Hotspot						Product Specific 10-g					
	Left cheek	Left tilt	Right cheek	Right tilt	Front side	Back side	Front side	Back side	Left side	Right side	Top side	Bottom side	Front side	Back side	Left side	Right side	Top side	Bottom side
GSM850	0.067	0.002	0.120	0.002	0.002	0.076	0.001	0.134	0.157	/	0.001	/	/	/	/	/	/	/
GSM 1900	0.261	0.284	0.391	0.512	0.090	0.146	0.121	0.189	0.001	/	0.258	/	/	/	/	/	/	/
UMTS B2	0.298	0.365	0.506	0.586	0.148	0.237	0.107	0.173	0.062	/	0.234	/	/	/	/	/	/	/
UMTS B4	0.240	0.325	0.402	0.498	0.001	0.059	0.072	0.135	0.001	/	0.215	/	/	/	/	/	/	/
UMTS B5	0.124	0.001	0.165	0.063	0.001	0.118	0.070	0.158	0.219	/	0.001	/	/	/	/	/	/	/
LTE B2	0.296	0.363	0.491	0.534	0.121	0.227	0.048	0.168	0.048	/	0.225	/	/	/	/	/	/	/
LTE B4	0.206	0.278	0.343	0.392	0.001	0.046	0.064	0.090	0.001	/	0.158	/	/	/	/	/	/	/
LTE B5	0.072	0.001	0.131	0.001	0.001	0.065	0.001	0.120	0.163	/	0.001	/	/	/	/	/	/	/
LTE B7	0.316	0.341	0.418	0.665	0.154	0.260	0.091	0.126	0.001	/	0.235	/	/	/	/	/	/	/
LTE B12	0.059	0.001	0.091	0.001	0.001	0.069	0.001	0.139	0.248	/	0.001	/	/	/	/	/	/	/
LTE B17	0.059	0.001	0.091	0.001	0.001	0.069	0.001	0.139	0.248	/	0.001	/	/	/	/	/	/	/
LTE B26	0.072	0.001	0.130	0.001	0.001	0.074	0.001	0.140	0.122	/	0.001	/	/	/	/	/	/	/
LTE B38	0.451	0.502	0.671	0.800	0.281	0.375	0.129	0.177	0.001	/	0.218	/	/	/	/	/	/	/
LTE B41	0.451	0.502	0.671	0.800	0.281	0.375	0.129	0.177	0.001	/	0.218	/	/	/	/	/	/	/
LTE B66	0.206	0.278	0.343	0.392	0.001	0.046	0.064	0.090	0.001	/	0.158	/	/	/	/	/	/	/
Max SAR	0.451	0.502	0.671	0.800	0.281	0.375	0.129	0.189	0.248	/	0.258	/	/	/	/	/	/	/

Table 83: Maximum SAR of 2/3/4G Second antenna

Band	Head				Body-worn		Hotspot						Product Specific 10-g					
	Left cheek	Left tilt	Right cheek	Right tilt	Front side	Back side	Front side	Back side	Left side	Right side	Top side	Bottom side	Front side	Back side	Left side	Right side	Top side	Bottom side
GSM850	0.177	0.115	0.164	0.112	0.187	0.293	0.346	0.311	/	0.153	/	0.227	/	/	/	/	/	/
GSM 1900	0.066	0.056	0.084	0.056	0.147	0.153	0.243	0.277	0.126	/	/	0.606	/	/	/	/	/	/
UMTS B2	0.152	0.115	0.174	0.115	0.242	0.258	0.312	0.361	0.261	/	/	0.698	/	/	/	/	/	/
UMTS B4	0.140	0.092	0.172	0.128	0.340	0.651	0.521	0.624	0.171	/	/	0.999	/	/	/	/	/	/
UMTS B5	0.239	0.148	0.217	0.126	0.273	0.338	0.437	0.505	/	0.185	/	0.296	/	/	/	/	/	/
LTE B2	0.128	0.115	0.180	0.118	0.195	0.252	0.347	0.399	0.155	/	/	0.761	/	/	/	/	/	/
LTE B4	0.165	0.087	0.182	0.115	0.229	0.260	0.360	0.455	0.122	/	/	0.688	/	/	/	/	/	/
LTE B5	0.215	0.102	0.207	0.123	0.204	0.283	0.345	0.419	/	0.158	/	0.222	/	/	/	/	/	/
LTE B7	0.170	0.118	0.213	0.138	0.237	0.321	0.266	0.364	0.096	/	/	0.632	/	/	/	/	/	/
LTE B12	0.115	0.001	0.072	0.001	0.162	0.218	0.253	0.283	/	0.168	/	0.097	/	/	/	/	/	/
LTE B17	0.115	0.001	0.072	0.001	0.162	0.218	0.253	0.283	/	0.168	/	0.097	/	/	/	/	/	/
LTE B26	0.196	0.092	0.165	0.104	0.183	0.277	0.311	0.416	/	0.157	/	0.199	/	/	/	/	/	/
LTE B38	0.094	0.088	0.153	0.067	0.116	0.238	0.229	0.304	0.048	/	/	0.642	/	/	/	/	/	/
LTE B41	0.082	0.081	0.137	0.077	0.116	0.238	0.229	0.304	0.048	/	/	0.642	/	/	/	/	/	/
LTE B66	0.165	0.087	0.182	0.115	0.229	0.489	0.360	0.455	0.122	/	/	0.688	/	/	/	/	/	/
Max SAR	0.239	0.148	0.217	0.138	0.340	0.651	0.521	0.624	0.261	0.185	/	0.999	/	/	/	/	/	/

Table 84: Maximum SAR of 2/3/4G Main antenna

Band/Ant	Case	Head				Body-worn		Hotspot						Product Specific 10-g					
		Left cheek	Left tilt	Right cheek	Right tilt	Front side	Back side	Front side	Back side	Left side	Right side	Top side	Bottom side	Front side	Back side	Left side	Right side	Top side	Bottom side
2.4G Wi-Fi Core0	1	0.438	0.277	0.189	0.185	0.065	0.119	0.132	0.280	/	0.162	0.162	/	/	/	/	/	/	/
2.4G Wi-Fi Core1	2	0.302	0.083	0.063	0.054	0.071	0.120	0.147	0.276	/	0.195	0.173	/	/	/	/	/	/	/
5G Wi-Fi Core0	3	0.756	0.541	0.451	0.436	0.248	0.273	0.342	0.301	/	/	0.367	/	1.174	0.905	/	/	2.064	/
5G Wi-Fi Core1	4	0.162	0.097	0.080	0.049	0.107	0.152	0.093	0.232	/	0.308	0.105	/	0.144	0.405	/	0.744	0.065	/
BT Core0	5	0.170	0.115	0.084	0.103	0.002	0.019	0.002	0.097	/	0.002	0.002	/	/	/	/	/	/	/
BT Core1	6	0.089	0.001	0.001	0.001	0.279	0.279	0.001	0.092	/	0.077	0.001	/	/	/	/	/	/	/
Simultaneous Transmission SAR	1+2 (2.4G Wi-Fi CDD/MIMO)	0.740	0.360	0.252	0.239	0.136	0.239	0.279	0.556	0.000	0.357	0.335	/	/	/	/	/	/	/
	3+4 (5G Wi-Fi CDD/MIMO)	0.918	0.638	0.531	0.485	0.355	0.425	0.435	0.533	0.000	0.308	0.472	/	1.318	1.310	/	0.744	2.129	/
	3+4+max(5,6)	1.088	0.753	0.615	0.588	0.634	0.704	0.437	0.630	0.000	0.385	0.474	/	1.318	1.310	/	0.744	2.129	/
Max SAR		1.088	0.753	0.615	0.588	0.634	0.704	0.437	0.630	0.000	0.385	0.474	0.000	1.318	1.310	0.000	0.744	2.129	/

Table 85: Simultaneous Transmission SAR calculation of Wi-Fi and BT.

Band/Ant	Case	Head				Body-worn		Hotspot						Product Specific 10-g					
		Left cheek	Left tilt	Right cheek	Right tilt	Front side	Back side	Front side	Back side	Left side	Right side	Top side	Bottom side	Front side	Back side	Left side	Right side	Top side	Bottom side
Wi-Fi&BT	1	1.088	0.753	0.615	0.588	0.634	0.704	0.437	0.630	/	0.385	0.474	/	1.318	1.310	/	0.744	2.129	/
2/3/4G	Second Ant	0.451	0.502	0.671	0.800	0.281	0.375	0.129	0.189	0.248	/	0.258	/	/	/	/	/	/	/
	Main Ant	0.239	0.148	0.217	0.138	0.340	0.651	0.521	0.624	0.261	0.185	/	0.999	/	/	/	/	/	/
Simultaneous Transmission SAR	1+max(2,3)	1.539	1.255	1.286	1.388	0.974	1.355	0.958	1.254	0.261	0.570	0.732	0.999	1.318	1.310	/	0.744	2.129	/

Table 86: Maximum SAR of 2/3/4G Simultaneous Transmission with Wi-Fi/BT.

Note:

- 1) The SAR test data of some frequency bands in the summed SAR tables, the more conservative SAR test results at the maximum output power level without any simultaneous transmission power reduction are used.
- 2) The green-colored SAR test data is performed on the max power reduction level of the simultaneous transmission scenario of 5G Wi-Fi + 2/3/4G.

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 D01.

Appendix A. System Check Plots**(Please See Appendix No.: SYBH(Z-SAR)20210816008001-A, total: 17 pages)****Appendix B. SAR Measurement Plots****(Please See Appendix No.: SYBH(Z-SAR)20210816008001-B, total: 48 pages)****Appendix C. Conducted Power Test Results****(Please See Appendix No.: SYBH(Z-SAR)20210816008001-C, total: 175 pages)****Appendix D. Conducted power test results for certain power reduction mechanisms validation****(Please See Appendix No.: SYBH (Z-SAR)20210816008001-D, total: 3 pages)****Appendix E. Calibration Certificate****(Please See Appendix No.: SYBH(Z-SAR)20210816008001-E, total: 118 pages)****Appendix F. Photo Documentation****(Please See Appendix No.: SYBH(Z-SAR)20210816008001-F, total: 8 pages)****Appendix G. Antenna Location****(Please See Appendix No.: SYBH(Z-SAR)20210816008001-G, total: 2 pages)**

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