FCC SAR TEST REPORT

Report No:	ZR/2020/70008
Applicant:	OnePlus Technology (shenzhen) Co., Ltd.
Manufacturer:	OnePlus Technology (shenzhen) Co., Ltd.
Product Name:	Smart Phone
Model No.(EUT):	BE2011, BE2012, BE2015
Trade Mark:	ONEPLUS
FCC ID:	2ABZ2-EF164
Standards:	FCC 47CFR §2.1093
Date of Receipt:	2020-08-10
Date of Test:	2020-08-19 to 2020-08-29
Date of Issue:	2020-09-11
Test conclusion:	**PASS ***

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Authorized Signature:

Derek Yang

Wireless Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

REVISION HISTORY

Report Number	Revision	Description	Issue Date
ZR/2020/7000807	01	Original	2020-09-11

TEST SUMMARY

Frequency Band	Maximum Reported SAR(W/kg)			
	Head	Body-worn	Hotspot	Product specific 10g SAR
GSM850	0.29	0.28	0.43	/
GSM1900	0.13	0.28	0.37	/
WCDMA Band II	0.45	0.60	0.86	/
WCDMA Band IV	0.23	0.39	0.57	/
WCDMA Band V	0.31	0.36	0.56	/
CDMA2000 BC0	0.21	0.27	0.46	/
CDMA2000 BC1	0.39	0.55	0.98	/
CDMA2000 BC10	0.17	0.25	0.36	/
LTE Band 7	0.16	0.42	0.80	/
LTE Band 12/17	0.22	0.37	0.51	/
LTE Band 13	0.21	0.30	0.36	/
LTE Band 25/2	0.39	**0.64**	**1.04**	/
LTE Band 26/5	0.30	0.29	0.66	/
LTE Band 38	0.21	0.38	0.67	/
LTE Band 41	0.18	0.31	0.70	/
LTE Band 66/4	0.23	0.37	0.73	/
LTE Band 71	0.26	0.33	0.49	/
WI-FI (2.4GHz)	**0.89**	0.17	0.29	/
WI-FI (5GHz)	0.67	0.56	0.51	**0.99**
BT	0.32	/	0.08	/
SAR Limited(W/kg)	1.6			4.0
Maximum Simultaneous Transmission SAR (W/kg)				
Scenario	Head	Body-worn	Hotspot	Product specific 10g SAR
Sum SAR	1.33	1.19	1.38	0.99
SPLSR	N/A	N/A	N/A	N/A
SPLSR Limited	0.04			0.1

Remark:
This device supports both LTE B2 and B25, LTE B4 and B66, LTE B5 and B26, LTE B12 and B17. Since the supported frequency span for LTE B2 falls completely within the supports frequency span for LTE B25, LTE B4 falls completely within the supports frequency span for LTE B66, LTE B5 falls completely within the supports frequency span for LTE B26, LTE B17 falls completely within the supports frequency span for LTE B12, both LTE bands have the same target power,and both LTE bands share the same transmission path; therefore,SAR was only assessed for LTE B12/25/26 and B66.

Approved & Released by

Simon Ling

SAR Manager

Tested by

Jackson Li

SAR Engineer

CONTENTS

1 General Information

1.1 Details of Client

Applicant:	OnePlus Technology (shenzhen) Co., Ltd.
Address:	18C02, 18C03, 18C04 and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen,China.
Manufacturer:	OnePlus Technology (shenzhen) Co., Ltd.
Address:	18C02, 18C03, 18C04 and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen,China.

1.2 Test Location

Company: SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab

Address: No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China

Post code: 518057

Telephone: +86 (0) 755 2601 2053

Fax: +86 (0) 755 2671 0594

E-mail: ee.shenzhen@sgs.com

1.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

• **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• **Industry Canada (IC)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006

IC#: 4620C.

1.4 General Description of EUT

Device Type :	portable device		
Exposure Category:	uncontrolled environment / general population		
Product Name:	Smart Phone		
Model No.(EUT):	BE2011, BE2012, BE2015		
FCC ID:	2ABZ2-EF164		
Trade Mark:	ONEPLUS		
Product Phase:	Identical Prototype		
SN:	8b21b0bd/fe9b3115		
Hardware Version:	44		
Software Version:	10.5.5.BE82CB		
Antenna Type:	Fixed Internal Antenna		
Device Operating Configurations :			
Modulation Mode:	**GSM:** GMSK, 8PSK; **WCDMA:** QPSK; **CDMA:** QPSK; **LTE:** QPSK,16QAM,64QAM **WIFI:** DSSS, OFDM; **BT:** GFSK, π/4DQPSK,8DPSK		
Device Class:	B		
GPRS Multi-slots Class:	12	EGPRS Multi-slots Class:	12
HSDPA UE Category:	14	HSUPA UE Category	6
DC-HSDPA UE Category:	24		
Power Class	4,tested with power level 5(GSM850)		
	1,tested with power level 0(GSM1900)		
	3, tested with power control “all 1”(WCDMA Band II/IV/V) 3, tested with power control “all up”(CDMA BC0/1/10)		
	3, tested with power control Max Power(LTE Band 2/4/5/7/12/13/17/25/26/38/41/66/71)		
Frequency Bands:	Band	Tx (MHz)	Rx (MHz)
	GSM850	824~849	869~894
	GSM1900	1850~1910	1930~1990
	WCDMA Band II	1850~1910	1930~1990
	WCDMA Band IV	1710~1755	2110~2155
	WCDMA Band V	824~849	869~894
	CDMA BC0	824~849	869~894
	CDMA BC1	1850~1910	1930~1990
	CDMA BC10	817~824	862~869
	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 13	777~787	746~756
	LTE Band 17	704~716	734~746
	LTE Band 25	1850~1915	1930~1995
	LTE Band 26	814~849	859~894
	LTE Band 38	2570~2620	2570~2620

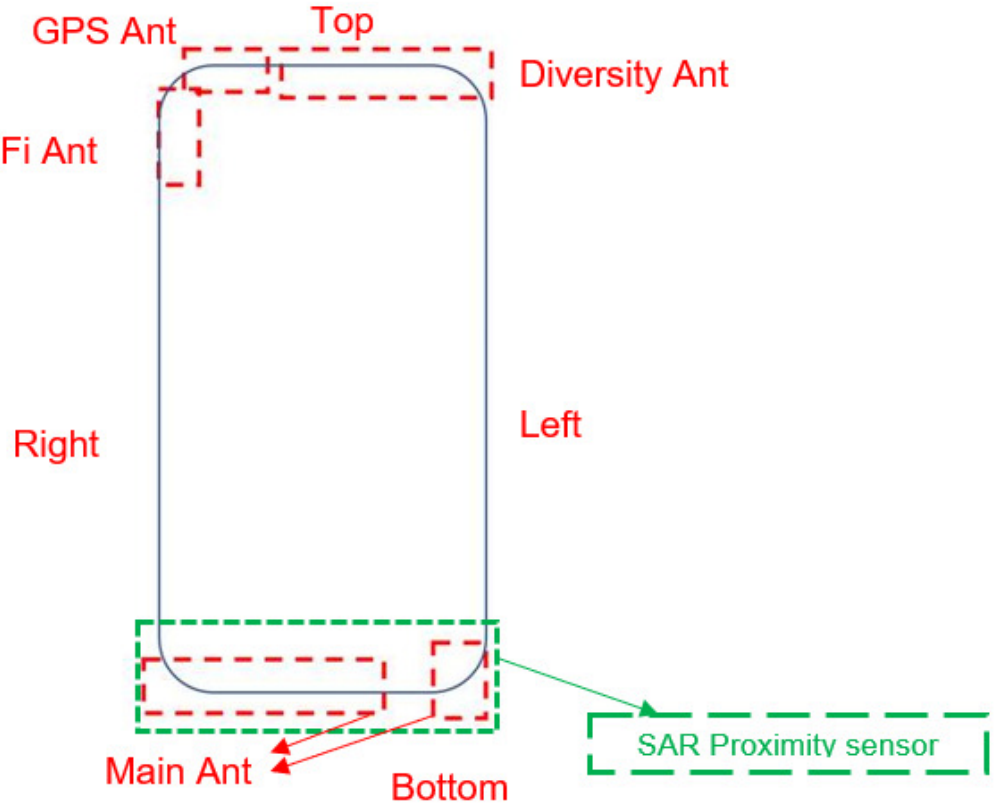
	LTE Band 41	2496~2690	2496~2690
	LTE Band 66	1710~1780	2110~2200
	LTE Band 71	663~698	617~652
	Bluetooth	2400~2483.5	2400~2483.5
	Wi-Fi 2.4G	2402~2472	2402~2472
	Wi-Fi 5G	5150~5250	5150~5250
		5250~5350	5250~5350
		5470~5725	5470~5725
		5725~5850	5725~5850
Battery Information:	Model:	BLP813	
	Normal Voltage:	+3.87V	
	Rated capacity:	4890mAh	
	Manufacturer:	Huizhou Desay Battery Co., Ltd.	
Headset Information:	Model:	MH156	
	Manufacturer:	Jiangxi Risound Electronics Co.,Ltd	

Remark:
The mobile phone BE2012 and BE2011 and BE2015 are GSM/CDMA/WCDMA/LTE mobile phone. The differences between BE2012 and BE2011 and BE2015 are showed in the following table. They only have different model name, other parts of the mobile phone are the same, including Chipsets, the appearance, Bluetooth mode, Wifi mode, Adapter, Battery, and so on.

Model name	BE2012	BE2011	BE2015
Type	Object of reference	New model	New model
GSM bands	/	The same	The same
WCDMA bands	/	The same	The same
LTE bands	/	The same	The same
SIM card	/	The same	The same
External camera	/	The same	The same
Internal camera	/	The same	The same
FLASH	/	The same	The same
Mainboard	/	The same	The same
PCB layout	/	The same	The same
Appearance	/	The same	The same
Bluetooth mode	/	The same	The same
WLAN mode	/	The same	The same
BT/ WLAN antenna	/	The same	The same
GSM/ WCDMA /LTE antenna	/	The same	The same
Adapter	/	The same	The same
Battery	/	The same	The same
Chipset	/	The same	The same
Memory	/	The same	The same
RF Parameter	/	The same	The same
Dimension	/	The same	The same

Note:
Model No.: BE2012, BE2011, BE2015.
Only the BE2012 was tested, since they only have different model name, other parts of the mobile phone are the same, including Chipsets, the appearance, Bluetooth mode, Wi-Fi mode, Adapter, Battery, and so on.

1.4.1 DUT Antenna Locations(Back View)



Note:
1) SAR Proximity sensor location is same as main Ant.
2) The test device is a smart phone. The overall diagonal dimension of this device is 174 mm. Per KDB 648474 D04, because the diagonal distance of this device is ≥160mm, so it is a phablet.
3) The diversity Antenna does not support transmitter function.

According to the distance between LTE/WCDMA/GSM&WIFI&BT antennas and the sides of the EUT we can draw the conclusion that:

EUT Sides for SAR Testing							
Mode	Exposure Condition	Front	Back	Left	Right	Top	Bottom
Main Ant	Hotspot/Product specific 10g SAR	Yes	Yes	Yes	Yes	No	Yes
WIFI 2.4G/5G BT	Hotspot/Product specific 10g SAR	Yes	Yes	No	Yes	Yes	No

Table 1： EUT Sides for SAR Testing
Note:
1) When the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.

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1.4.2 Power reduction specification

This device uses a single fixed level of power reduction through static table look-up for SAR compliance and it is triggered by a single event or operation

1) A fixed level power reduction is applied for some frequency bands when simultaneously transmitting with the other antennas in certain simultaneous transmission conditions. The standalone SAR compliance still uses the standalone SAR results tested at the maximum output power level without any power reduction

2) A fixed level power reduction is applied for some frequency bands when handset operate "held to the ear" condition, the power reduction triggered by audio receiver detection. The audio receiver detection is used to determine head or body scenario.

3) The proximity sensor is used to indicate when the device is held close to a user's body exposure condition. It utilizes the proximity sensor to reduce the output power in specific wireless and operating modes of main antenna to ensure SAR compliance(Refer to section 5.4 for detailed proximity Sensor information and validation data per KDB 616217).

The following tables summarize the key power reduction information. The detailed full power which is the Max. power the state can use and reduced tune-up specifications and conducted power measurement results are provided in Section 8 of this report.

Main antenna Power Level(dBm)			
Band/ Power Reduction Scenario	**Sensor off (state3)**	**Sensor on (state2: 3mm-6mm)**	**Sensor on (state1: 0mm-3mm)**
GSM850	33.8	31.8	29.8
GSM1900	30.8	28.8	26.8
WCDMA Band II	24.8	22.8	20.8
WCDMA Band IV	24.8	23.3	21.3
CDMA BC1	24.8	22.8	20.8
CDMA BC10	24.8	22.8	20.8
LTE Band 2	24.8	22.8	20.8
LTE Band 4	24.8	22.8	20.8
LTE Band 7	24.3	23.3	21.3
LTE Band 25	24.8	22.8	20.8
LTE Band 38	24.8	23.8	21.8
LTE Band 41(Class 3)	24.8	20.8	18.8
LTE Band 41(Class 2)	26.8	19.8	17.8
LTE Band 66	24.8	22.8	20.8

WiFi antenna Power Level(dBm)					
Power Reduction Scenario		Receiver off	WWAN transmit simultaneously with WiFi (Receiver off)	Receiver on	WWAN transmit simultaneously with WiFi (Receiver on)
WiFi 2.4G	802.11 b	18.0	15.0	17.0	15.0
	802.11 g	17.0	14.0	16.0	14.0
	802.11 n 20M	16.0	13.0	15.0	13.0
	802.11 n 40M	15.0	12.0	14.0	12.0
WiFi 5G	802.11a	15.0	13.0	13.0	11.0
	802.11n 20M	14.0	12.0	12.0	10.0
	802.11n 40M	13.0	11.0	11.0	9.0
	802.11ac 20M	12.0	10.0	10.0	8.0
	802.11ac 40M	11.5	9.5	9.5	7.5
	802.11ac 80M	11.5	9.5	9.5	7.5

1.5 Test Specification

Identity	Document Title
FCC 47CFR §2.1093	Radiofrequency Radiation Exposure Evaluation: Portable Devices
ANSI/IEEE C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.
IEEE 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
KDB 941225 D01	3G SAR Measurement Procedures v03r01
KDB 941225 D05	SAR for LTE Devices v02r05
KDB 941225 D05A	LTE Rel.10 KDB Inquiry Sheet v01r02
KDB 941225 D06	Hotspot Mode SAR v02r01
KDB 248227 D01	SAR Guidance for IEEE 802 11 Wi-Fi SAR v02r02
KDB 648474 D04	Handset SAR v01r03
KDB447498 D01	General RF Exposure Guidance v06
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
KDB 616217 D04	SAR for laptop and tablets v01r02

1.6 RF exposure limits

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

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.)

2 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

Table 2： The Ambient Conditions

3 SAR Measurements System Configuration

3.1 The SAR Measurement System

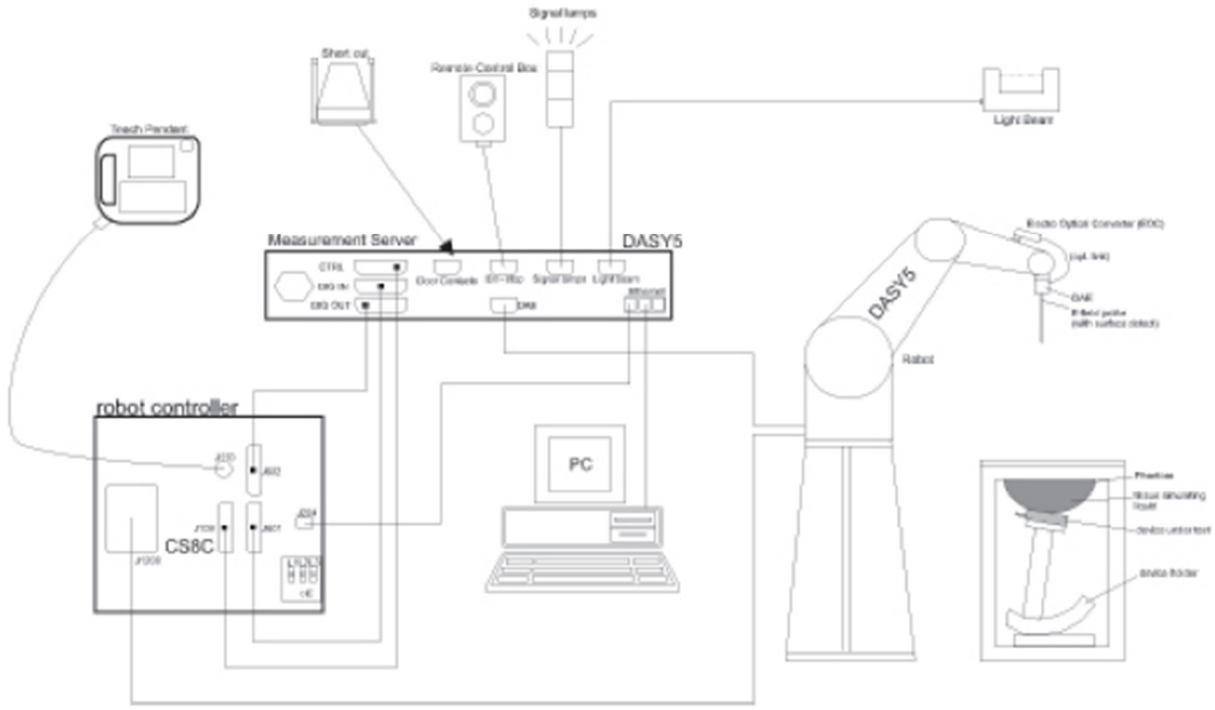
This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY5 professional system). A E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ (|Ei|2)/ ρ where σ and ρ are the conductivity and mass density of the tissue-Simulate.

The DASY5 system for performing compliance tests consists of the following items:
A standard high precision 6-axis robot (Stabile RX family) with controller, teach pendant and software .An arm extension for accommodation 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 electronics (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.

The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.



F-1. SAR Measurement System Configuration

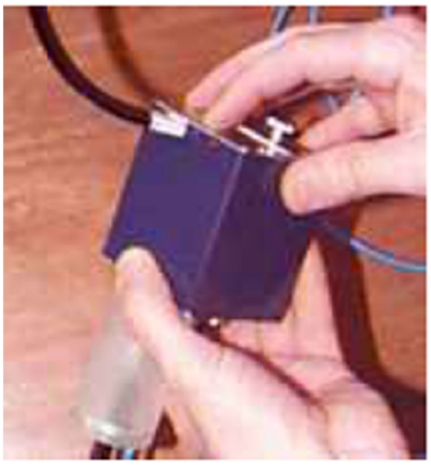
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 7.
- DASY5 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand, right-hand and Body Worn usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing to validating the proper functioning of the system.

3.2 Isotropic E-field Probe EX3DV4

	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 TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/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); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI

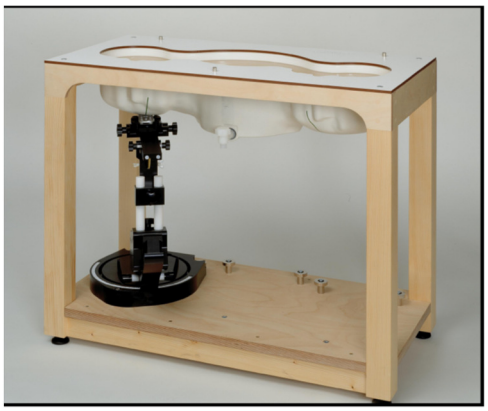
3.3 Data Acquisition Electronics (DAE)

Model	DAE
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY4/5 embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.
Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4mV,400mV)
Input Offset Voltage	< 5µV (with auto zero)
Input Bias Current	< 50 f A
Dimensions	60 x 60 x 68 mm



3.4 SAM Twin Phantom

Material	Vinylester, glass fiber reinforced (VE-GF)
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)
Dimensions (incl. Wooden Support)	Length: 1000 mm Width: 500 mm Height: adjustable feet
Filling Volume	approx. 25 liters
Wooden Support	SPEAG standard phantom table

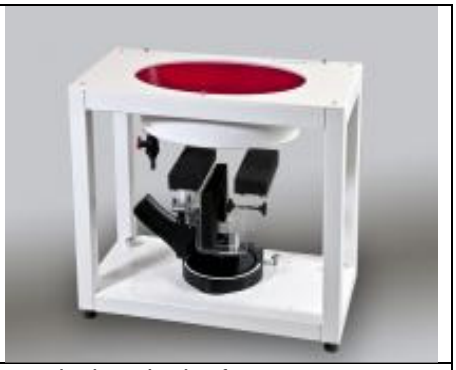


The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.

Twin SAM V5.0 has the same shell geometry and is manufactured from the same material as Twin SAM V4.0, but has reinforced top structure.

3.5 ELI Phantom

Material	Vinylester, glass fiber reinforced (VE-GF)
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)
Shell Thickness	2.0 ± 0.2 mm (bottom plate)
Dimensions	Major axis: 600 mm Minor axis: 400 mm
Filling Volume	approx. 30 liters
Wooden Support	SPEAG standard phantom table



Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.

ELI V5.0 has the same shell geometry and is manufactured from the same material as ELI4, but has reinforced top structure.

3.6 Device Holder for Transmitters

F-2. **Device Holder for Transmitters**

- The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation centres for both scales are the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.
- The DASY device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity ε=3 and loss tangent δ=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.

3.7 Measurement procedure

3.7.1 Scanning procedure

Step 1: Power reference measurement

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.

Step 2: *Area scan*

The SAR distribution at the exposed side of the head was measured at a distance of 4mm from the inner surface of the shell. The area covered the entire dimension of the head and the horizontal grid spacing was 15mm*15mm or 12mm*12mm or 10mm*10mm.Based on the area scan data, the area of the maximum absorption was determined by spline interpolation.

Step 3: *Zoom scan*

Around this point, a volume of 32mm*32mm*30mm (f≤2GHz), 30mm*30mm*30mm (f for 2-3GHz) and 24mm*24mm*22mm (f for 5-6GHz) was assessed by measuring 5x5x7 points (f≤2GHz), 7x7x7 points (f for 2-3GHz) and 7x7x12 points (f for 5-6GHz). On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

The data at the surface was extrapolated, since the centre of the dipoles is 2.0mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2mm. (This can be variable. Refer to the probe specification).The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 3D-Spline interpolation algorithm. The volume was integrated with the trapezoidal algorithm. One thousand points were interpolated to calculate the average. All neighbouring volumes were evaluated until no neighboring volume with a higher average value was found.

The area and zoom scan resolutions specified in the table below must be applied to the SAR measurements Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std. 1528-2013.

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Step 4: Power reference measurement (drift)

The Power Drift Measurement job measures the field at the same location as the most recent power reference measurement job within the same procedure, and with the same settings. The indicated drift is mainly the variation of the DUT's output power and should vary max. ± 5 %

3.7.2 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 ".DAE4". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated. The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [℃], [m W/g], [m W/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.

3.7.3 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 Normi, ai0, ai1, ai2
- Conversion factor ConvFi
- Diode compression point Dcpi
Device parameters: - Frequency f
- Crest factor cf
Media parameters: - Conductivity ε
- 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 Vi = compensated signal of channel i (i = x, y, z)
Ui = 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:

E-field probes:

$$E_i = (V_i / Norm_i \cdot ConvF)^{1/2}$$

H-field probes:

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

With Vi = compensated signal of channel i (i = x, y, z)
Normi = sensor sensitivity of channel I (i = x, y, z)
[mV/(V/m)2] for E-field Probes
ConvF = sensitivity enhancement in solution
aij = sensor sensitivity factors for H-field probes
f = carrier frequency [GHz]
Ei = electric field strength of channel i in V/m
Hi = magnetic field strength of channel i in A/m

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

$$E_{tot} = (E_x^2 + E_Y^2 + E_z^2)^{1/2}$$

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

$$SAR = (Etot^2 \cdot \sigma) / (\varepsilon \cdot 1000)$$

with SAR = local specific absorption rate in mW/g
Etot = total field strength in V/m
σ= conductivity in [mho/m] or [Siemens/m]
ε= 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.

$$P_{pwe} = E_{tot}{}^2{}_2 / 3770 \text{ or } \quad P_{pwe} = H_{tot}^2 \cdot 37.7$$

with Ppwe = equivalent power density of a plane wave in mW/cm2
Etot = total electric field strength in V/m
Htot = total magnetic field strength in A/m

4 SAR measurement variability and uncertainty

4.1 SAR measurement variability

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

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.

2) When the original highest measured SAR is ⩾ 0.80 W/kg, repeat that measurement once.

3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ⩾ 1.45 W/kg (~ 10% from the 1-g SAR limit).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is ⩾1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

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

4.2 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.

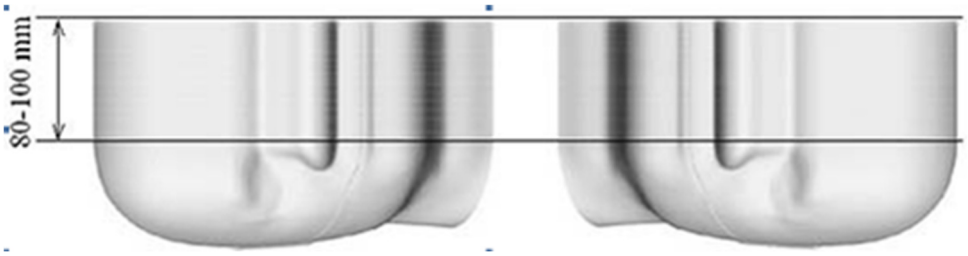
5 Description of Test Position

5.1 Head Exposure Condition

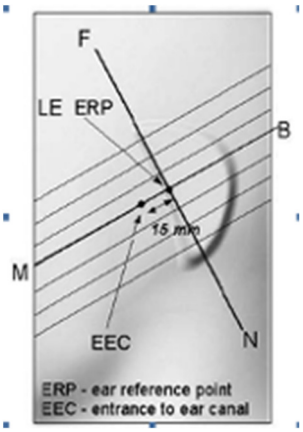
5.1.1 SAM Phantom Shape

F-3. Front, back, and side views of SAM (model for the phantom shell). Full-head model is for illustration purposes only-procedures in this recommended practice are intended primarily for the phantom setup.

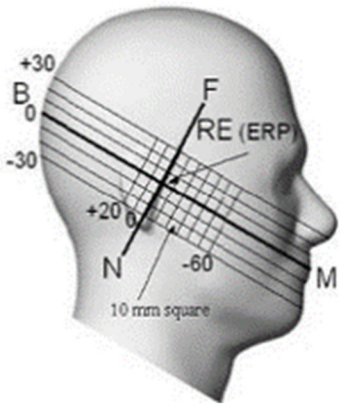
Note: The centre strip including the nose region has a different thickness tolerance.



F-4. Sagittally bisected phantom with extended perimeter (shown placed on its side as used for SAR measurements)

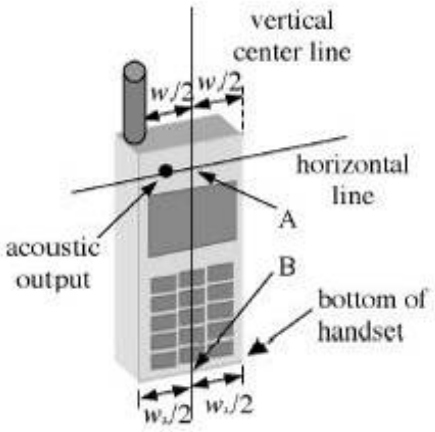


F-5. Close-up side view of phantom, showing the ear region, N-F and B-M lines, and seven cross-sectional plane locations

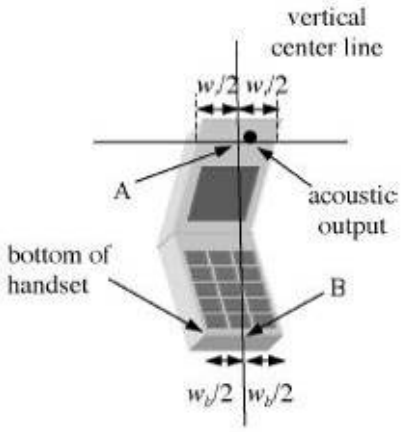


F-6. Side view of the phantom showing relevant markings and seven cross-sectional plane locations

5.1.2 EUT constructions



F-7. Handset vertical and horizontal reference lines-“fixed case”



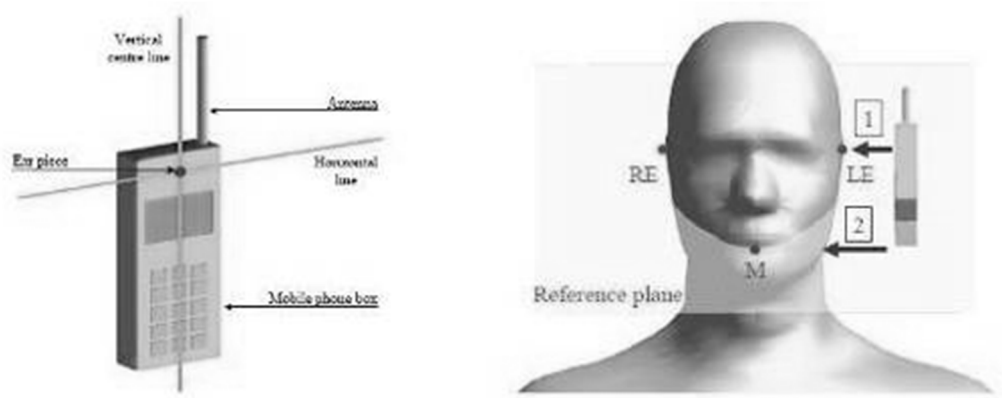
F-8. Handset vertical and horizontal reference lines-“clam-shell case”

5.1.3 Definition of the “cheek” position

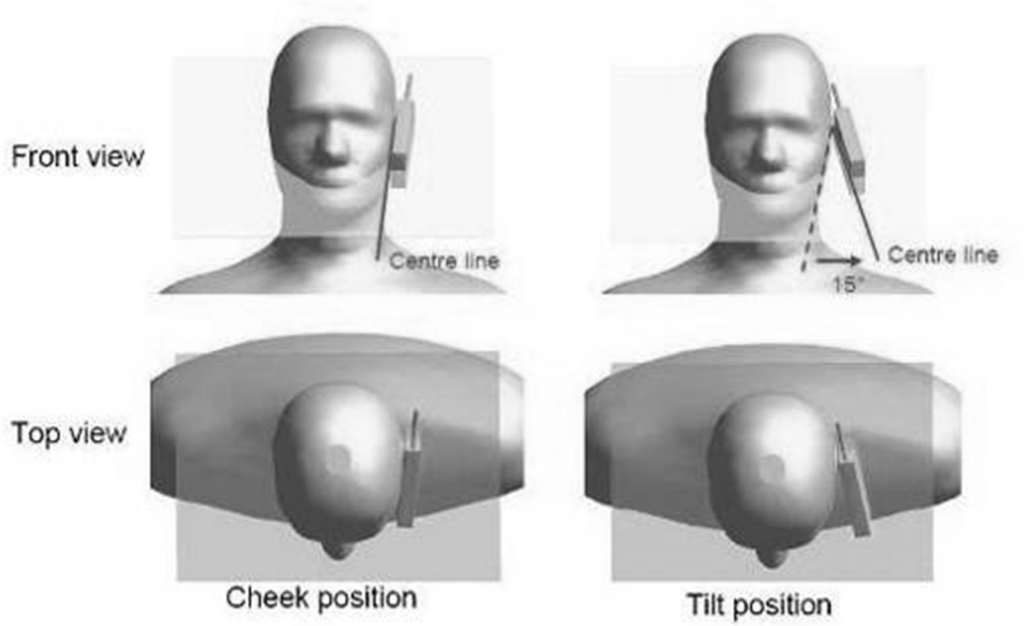
a) Position the device with the vertical centre line of the body of the device and the horizontal line crossing the centre of the ear piece in a plane parallel to the sagittal plane of the phantom ("initial position"). While maintaining the device in this plane, align the vertical centre line with the reference plane containing the three ear and mouth reference points (M, RE and LE) and align the centre of the ear piece with the line RE-LE.
b) Translate the mobile phone box towards the phantom with the ear piece aligned with the line LE-RE until telephone touches the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the box until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost.

5.1.4 Definition of the "tilted" position

a) Position the device in the "cheek" position described above;
b) While maintaining the device in the reference plane described above and pivoting against the ear, move it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost.



F-9. **Definition of the reference lines and points, on the phone and on the phantom and initial position**



F-10. **"Cheek" and "tilt" positions of the mobile phone on the left side**

5.2 Body Exposure Condition

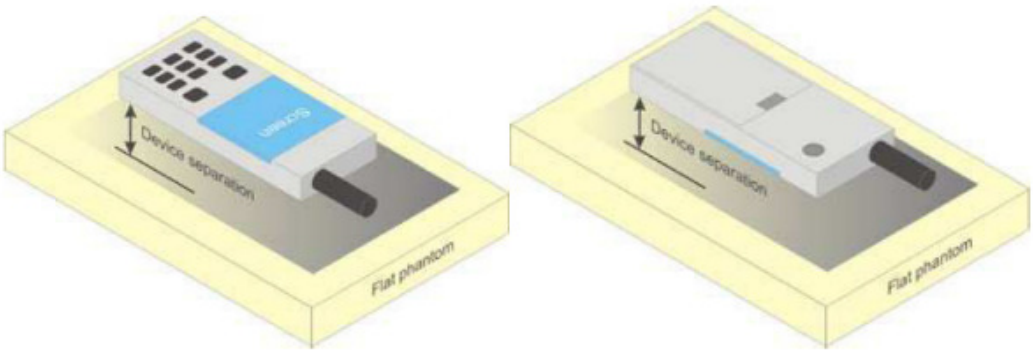
5.2.1 Body-worn accessory exposure conditions

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations.

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration. Per FCC KDB Publication 648474 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 KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented. Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.



F-11. **Test positions for body-worn devices**

5.2.2 Wireless Router exposure conditions

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10 mm from the front, back and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. For devices with form factors smaller than 9 cm x 5 cm, a test separation distance of 5 mm is required.

5.3 Extremity exposure conditions

Per FCC KDB 648474D04, 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.

Due to the SAR result, the main antenna frequency bands are not required to test with 0mm for the Product Specific 10 g SAR.

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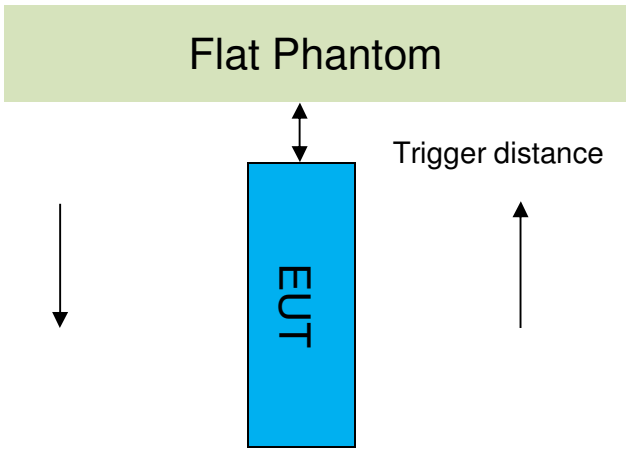
5.1 Proximity Sensor Triggering Test

Proximity sensor triggering distances:

The Proximity sensor triggering was applied to GSM850/1900, WCDMA Band II/IV, CDMA BC1/10 and LTE Band 2/4/7/25/38/41/66. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed.



Band	Test position	Sensor Trigger Distance range (DUT to Phantom)	Max Power level(dBm)	Power Level
GSM850	Front side/Back side/ Left side/Right side/ Bottom side	0<distance≤3mm	33.8	state1
		3<distance≤6mm	31.8	State2
		6<distance	29.8	State3
	Top side	All	33.8	State3
GSM1900	Front side/Back side/ Left side/Right side/ Bottom side	0<distance≤3mm	30.8	state1
		3<distance≤6mm	28.8	State2
		6<distance	26.8	State3
	Top side	All	30.8	State3
WCDMA Band II	Front side/Back side/ Left side/Right side/ Bottom side	0<distance≤3mm	24.8	state1
		3<distance≤6mm	22.8	State2
		6<distance	20.8	State3
	Top side	All	24.8	State3
WCDMA Band IV	Front side/Back side/ Left side/Right side/ Bottom side	0<distance≤3mm	24.8	state1
		3<distance≤6mm	23.3	State2
		6<distance	21.3	State3
	Top side	All	24.8	State3
CDMA BC1	Front side/Back side/ Left side/Right side/ Bottom side	0<distance≤3mm	24.8	state1
		3<distance≤6mm	22.8	State2
		6<distance	20.8	State3
	Top side	All	24.8	State3
CDMA BC10	Front side/Back side/ Left side/Right side/ Bottom side	0<distance≤3mm	24.8	state1
		3<distance≤6mm	22.8	State2
		6<distance	20.8	State3
	Top side	All	24.8	State3

LTE Band 2	Front side/Back side/ Left side/Right side/ Bottom side	0<distance≤3mm	24.8	state1
		3<distance≤6mm	22.8	State2
		6<distance	20.8	State3
	Top side	All	24.8	State3
LTE Band 4	Front side/Back side/ Left side/Right side/ Bottom side	0<distance≤3mm	24.8	state1
		3<distance≤6mm	22.8	State2
		6<distance	20.8	State3
	Top side	All	24.8	State3
LTE Band 7	Front side/Back side/ Left side/Right side/ Bottom side	0<distance≤3mm	24.3	state1
		3<distance≤6mm	23.3	State2
		6<distance	21.3	State3
	Top side	All	24.3	State3
LTE Band 38	Front side/Back side/ Left side/Right side/ Bottom side	0<distance≤3mm	24.8	state1
		3<distance≤6mm	23.8	State2
		6<distance	21.8	State3
	Top side	ALL	24.8	State3
LTE Band 41(Class 3)	Front side/Back side/ Left side/Right side/ Bottom side	0<distance≤3mm	24.8	state1
		3<distance≤6mm	20.8	State2
		6<distance	18.8	State3
	Top side	All	24.8	State3
LTE Band 41(Class 2)	Front side/Back side/ Left side/Right side/ Bottom side	0<distance≤3mm	26.8	state1
		3<distance≤6mm	19.8	State2
		6<distance	17.8	State3
	Top side	All	26.8	State3
LTE Band 66	Front side/Back side/ Left side/Right side/ Bottom side	0<distance≤3mm	24.8	state1
		3<distance≤6mm	22.8	State2
		6<distance	20.8	State3
	Top side	All	24.8	State3

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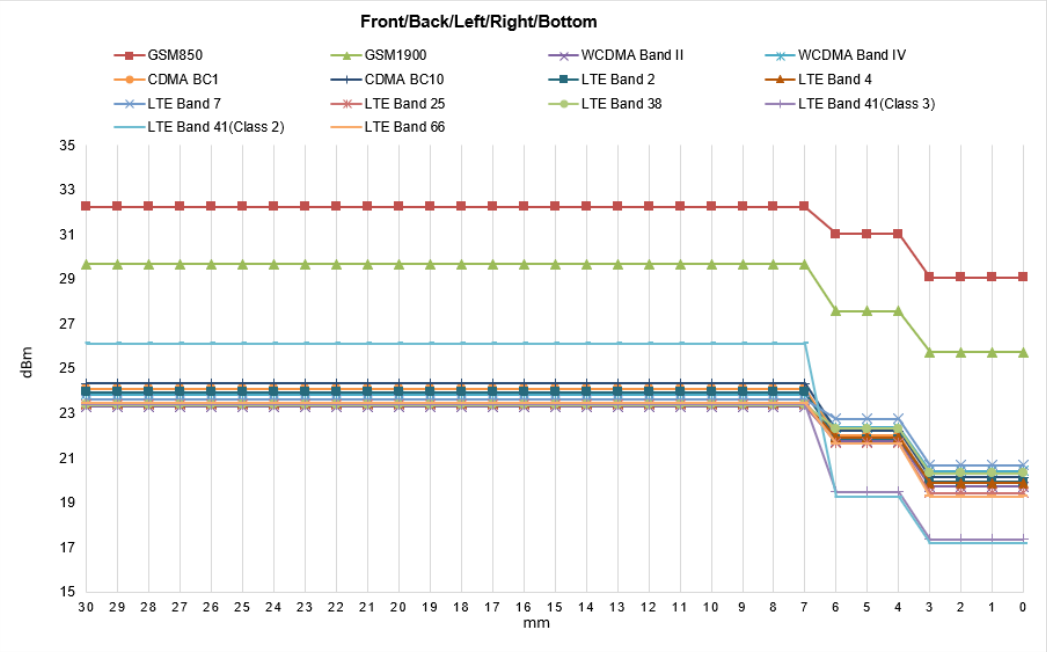
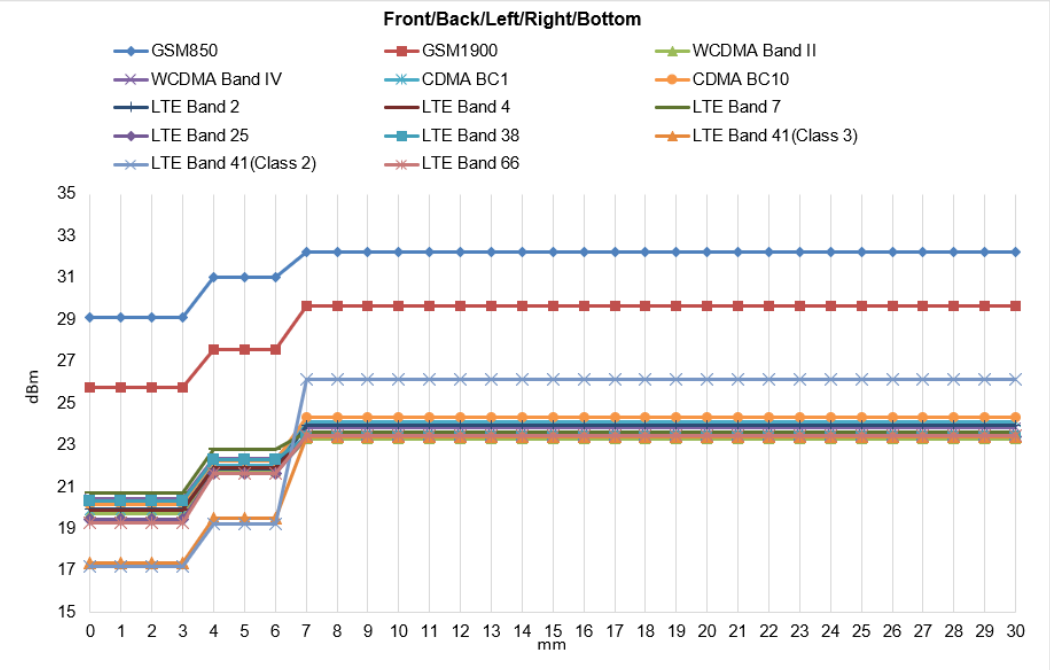
- DUT Moving Toward(Trigger)the Phantom



- DUT Moving Away(Release) from the Phantom



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Proximity sensor coverage

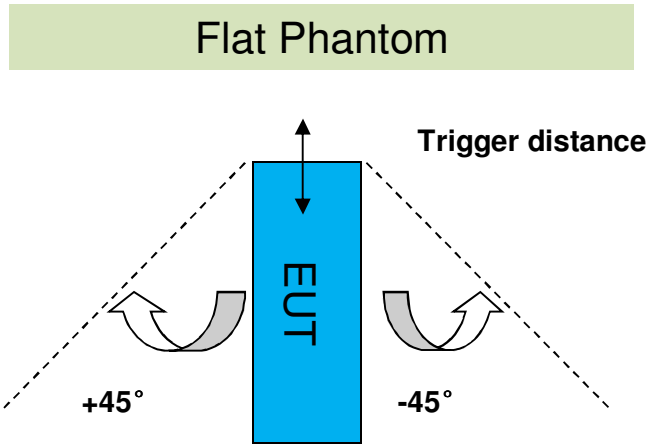
If a sensor is spatially offset from the antenna(s), it is necessary to verify sensor triggering for conditions where the antenna is next to the user but the sensor is laterally further away to ensure sensor coverage is sufficient for reducing the power to maintain compliance. For p-sensor coverage testing, the device is moved and “along the direction of maximum antenna and sensor offset”.

The proximity sensor and main antenna use same metallic electrode, so there is no spatial offset.

Device tilt angle influences to proximity sensor triggering

The influence of device tilt angles to proximity sensor triggering was determined by positioning each tablet edge that contains a transmitting antenna, perpendicular to the flat phantom.

Rotating the tablet around the edge next to the phantom in ≤ 10° increments until the tablet is ± 45° from the vertical position at 0°, and the maximum output power remains in the reduced mode.



Summary of Tablet Tilt Angle Influence to Proximity Sensor Triggering for Top Side												
Band (MHz)	Minimum trigger distance Per KDB616217§6.2	Minimum trigger distance at which power reduction was maintained over ±45°	Power Reduction Status									
			-45°	-35°	-25°	-15°	-5°	0°	5°	15°	25°	35°	45°
GSM850	3mm 6mm	3mm 6mm	on	on	on	on	on	on	on	on	on	on	on
GSM1900	3mm 6mm	3mm 6mm	on	on	on	on	on	on	on	on	on	on	on
WCDMA Band II	3mm 6mm	3mm 6mm	on	on	on	on	on	on	on	on	on	on	on
WCDMA Band IV	3mm 6mm	3mm 6mm	on	on	on	on	on	on	on	on	on	on	on
CDMA BC1	3mm 6mm	3mm 6mm	on	on	on	on	on	on	on	on	on	on	on
CDMA BC10	3mm 6mm	3mm 6mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 2	3mm 6mm	3mm 6mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 4	3mm 6mm	3mm 6mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 7	3mm 6mm	3mm 6mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 25	3mm 6mm	3mm 6mm	on	on	on	on	on	on	on	on	on	on	on

LTE Band 38	3mm 6mm	3mm 6mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 41 (Class 3)	3mm 6mm	3mm 6mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 41 (Class 2)	3mm 6mm	3mm 6mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 66	3mm 6mm	3mm 6mm	on	on	on	on	on	on	on	on	on	on	on

SAR test plan:

For the Body worn and Hotspot SAR test with sensor off, because the sensor triggering distance is≤ 6mm.

6 SAR System Verification Procedure

6.1 Tissue Simulate Liquid

6.1.1 Recipes for Tissue Simulate Liquid

The bellowing tables give the recipes for tissue simulating liquids to be used in different frequency bands：

Ingredients (% by weight)	Frequency (MHz)				
	450	700-900	1750-2000	2300-2500	2500-2700
Water	38.56	40.30	55.24	55.00	54.92
Salt (NaCl)	3.95	1.38	0.31	0.2	0.23
Sucrose	56.32	57.90	0	0	0
HEC	0.98	0.24	0	0	0
Bactericide	0.19	0.18	0	0	0
Tween	0	0	44.45	44.80	44.85
Salt: 99+% Pure Sodium Chloride Water: De-ionized, 16 MΩ+ resistivity Tween: Polyoxyethylene (20) sorbitan monolaurate			Sucrose: 98+% Pure Sucrose HEC: Hydroxyethyl Cellulose		
HSL5GHz is composed of the following ingredients： Water：50-65% Mineral oil：10-30% Emulsifiers：8-25% Sodium salt：0-1.5%					

Table 3： Recipe of Tissue Simulate Liquid

6.1.2 Measurement for Tissue Simulate Liquid

The dielectric properties for this Tissue Simulate Liquids were measured by using the Agilent Model 85070E Dielectric Probe in conjunction with Agilent E5071C Network Analyzer (300 KHz-8500 MHz). The Conductivity (σ) and Permittivity (ρ) are listed in bellow table. For the SAR measurement given in this report. The temperature variation of the Tissue Simulate Liquids was 22±2℃.

Tissue Type	Measured Frequency (MHz)	Target Tissue (±5%)		Measured Tissue		Liquid Temp.(℃)	Measured Date
		ε_r	σ(S/m)	ε_r	σ(S/m)		
750 Head	750	41.9 (39.81~44)	0.89 (0.85~0.94)	41.649	0.895	22.1	2020/8/19
750 Head	750	41.9 (39.81~44)	0.89 (0.85~0.94)	43.089	0.878	22.1	2020/8/22
835 Head	835	41.5 (39.43~43.58)	0.90 (0.86~0.95)	41.790	0.937	22.1	2020/8/20
835 Head	835	41.5 (39.43~43.58)	0.90 (0.86~0.95)	42.457	0.919	22.1	2020/8/21
1750 Head	1750	40.1 (38.10~42.11)	1.37 (1.30~1.44)	38.773	1.364	22.2	2020/8/25
1900 Head	1900	40.0 (38.00~42.00)	1.40 (1.33~1.47)	41.171	1.437	22.3	2020/8/24
1900 Head	1900	40.0 (38.00~42.00)	1.40 (1.33~1.47)	39.959	1.360	22.3	2020/8/26
2450 Head	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	38.322	1.850	22.0	2020/8/27
2600 Head	2600	39.0 (37.05~40.95)	1.96 (1.86~2.06)	38.094	1.974	22.1	2020/8/23
2600 Head	2600	39.0 (37.05~40.95)	1.96 (1.86~2.06)	39.385	2.000	22.1	2020/8/24
5250 Head	5250	35.9 (34.11~37.70)	4.71 (4.47~4.95)	36.011	4.721	22.2	2020/8/28
5600 Head	5600	35.5 (33.73~37.28)	5.07 (4.82~5.32)	35.059	5.107	22.2	2020/8/28
5750 Head	5750	35.4 (33.63~37.17)	5.22 (4.96~5.48)	34.695	5.279	22.2	2020/8/29

Table 4： Measurement result of Tissue electric parameters

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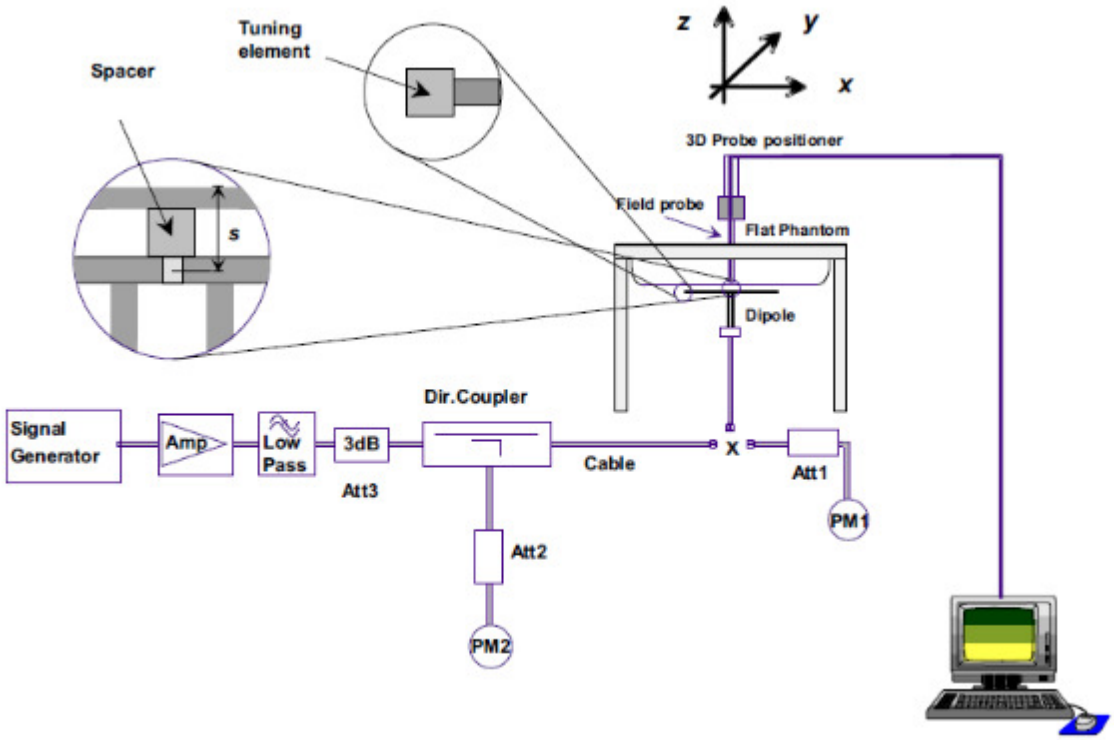
6.2 SAR System Check

The microwave circuit arrangement for system Check is sketched in F-12. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values. The tests were conducted on the same days as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the following table (A power level of 250mW (below 3GHz) or 100mW (3-6GHz) was input to the dipole antenna). During the tests, the ambient temperature of the laboratory was in the range 22±2℃, the relative humidity was in the range 60% and the liquid depth above the ear reference points was above 15±0.5 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.



F-12. the microwave circuit arrangement used for SAR system check

6.2.1 Justification for Extended SAR Dipole Calibrations

1) Referring to KDB865664 D01 requirements for dipole calibration, instead of the typical annual calibration recommended by measurement standards, longer calibration intervals of up to three years may be considered when it is demonstrated that the SAR target, impedance and return loss of a dipole have remain stable according to the following requirements. Each measured dipole is expected to evaluate with the following criteria at least on annual interval in Appendix C.
a) There is no physical damage on the dipole;
b) System check with specific dipole is within 10% of calibrated value;
c) Return-loss is within 10% of calibrated measurement;
d) Impedance 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.

6.2.2 Summary System Check Result(s)

Validation Kit		Measured SAR 250mW	Measured SAR 250mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W) (±10%)	Target SAR (normalized to 1W) (±10%)	Liquid Temp. (℃)	Measured Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)		
D750V2	Head	2.18	1.43	8.72	5.72	8.39 (7.55~9.23)	5.63 (5.07~6.19)	22.1	2020/8/19
D750V2	Head	2.14	1.40	8.56	5.60	8.39 (7.55~9.23)	5.63 (5.07~6.19)	22.1	2020/8/22
D835V2	Head	2.61	1.70	10.44	6.80	9.64 (8.68~10.60)	6.29 (5.66~6.92)	22.1	2020/8/20
D835V2	Head	2.56	1.67	10.24	6.68	9.64 (8.68~10.60)	6.29 (5.66~6.92)	22.1	2020/8/21
D1750V2	Head	9.49	5.05	37.96	20.20	36.3 (32.67~39.93)	19.2 (17.28~21.12)	22.2	2020/8/25
D1900V2	Head	10.60	5.49	42.40	21.96	39.3 (35.37~43.23)	20.2 (18.18~22.22)	22.3	2020/8/24
D1900V2	Head	10.10	5.20	40.40	20.80	39.3 (35.37~43.23)	20.2 (18.18~22.22)	22.3	2020/8/26
D2450V2	Head	13.50	6.25	54.00	25.00	51.9 (46.71~57.09)	23.8 (21.42~26.18)	22.0	2020/8/27
D2600V2	Head	13.70	6.10	54.80	24.40	56.8 (51.12~62.48)	24.9 (22.41~27.39)	22.1	2020/8/23
D2600V2	Head	14.10	6.31	56.40	25.24	56.8 (51.12~62.48)	24.9 (22.41~27.39)	22.1	2020/8/24
Validation Kit		Measured SAR 100mW	Measured SAR 100mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W) (±10%)	Target SAR (normalized to 1W) (±10%)	Liquid Temp. (℃)	Measured Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)		
D5GHzV2	Head (5.25GHz)	7.18	2.04	71.80	20.40	75.2 (67.68~82.72)	21.5 (19.35~23.65)	22.2	2020/8/28
	Head (5.6GHz)	7.67	2.16	76.70	21.60	80.0 (72.0~88.0)	22.7 (20.43~24.97)	22.2	2020/8/28
	Head (5.75GHz)	8.38	2.39	83.80	23.90	78.7 (70.83~86.57)	22.3 (20.07~24.53)	22.2	2020/8/29

Table 5： SAR System Check Result

6.2.3 Detailed System Check Results

Please see the Appendix A

7 Test Configuration

7.1 3G SAR Test Reduction Procedure

According to KDB 941225D01, in the following procedures, the mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

7.2 Operation Configurations

7.2.1 GSM Test Configuration

SAR tests for GSM 850 and GSM 1900, a communication link is set up with a base station by air link. Using CMW500 the power lever is set to “5”and “0” in SAR of GSM 850 and GSM 1900. The tests in the band of GSM 850 and GSM 1900 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.

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.

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.

The 3G SAR test reduction procedure is applied to 8-PSK EDGE with GMSK GPRS/EDGE as the primary mode

7.2.2 CDMA Test Configuration

1）. 1x RTT Handsets

The following procedures apply to CDMA 2000 Release 0 and Release A single carrier (1x RTT) handsets operating with Mobile Protocol Revision 6 or 7 (MOB_P_REV 6 or 7). The default test configuration is to measure SAR in RC3 with an established radio link between the handset and a communication test set. SAR in RC1 is selectively confirmed according to the 3G SAR test reduction procedure with RC3 as the primary mode. The forward and reverse links are configured with the same RC for SAR measurement. Maximum output power is verified by applying the procedures defined in 3GPP2 C. S0011 and TIA-98-E. SAR must be measured according to these maximum output conditions and requirements in KDB Publication 447498 D01.

2）. Output Power Verification

Maximum output power is verified on the high, middle and low channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. Results for at least steps 3, 4 and 10 of the power measurement procedures are required in the SAR report. Steps 3 and 4 are measured using Loopback Service Option SO55 with power control bits in “All Up” condition. TDSO/SO32 may be used instead of SO55 for step 4. Step 10 is measured using TDSO/SO32 with power control bits in the “Bits Hold” condition (i.e. alternative Up/Down Bits). All power measurements defined in C.S0011/TIA-98-E that are inapplicable to the handset or cannot be measured due to technical or equipment limitations must be clearly identified in the test report.

3）. Head SAR

SAR for next to the ear head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55. The 3G SAR test reduction procedure is applied to RC1 with RC3 as the primary mode; otherwise, SAR is required for the channel with maximum measured output in RC1 using the head exposure configuration that results in the highest reported SAR in RC3.

4）. Body-Worn Accessory SAR

Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The body-worn accessory procedures in KDB Publication 447498 D01 are applied. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCHn), with FCH only as the primary mode. Otherwise, SAR is required for multiple code channel configuration (FCH + SCHn), with FCH at full rate and SCH0 enabled at 9600 bps, using the highest reported SAR configuration for FCH only. When multiple code channels are enabled, the transmitter output can shift by more than 0.5 dB and may lead to higher SAR drifts and SCH dropouts.

The 3G SAR test reduction procedure is applied to body-worn accessory SAR in RC1 with RC3 as the primary mode. Otherwise, SAR is required for RC1, with SO55 and full rate, using the highest reported SAR configuration for body-worn accessory exposure in RC3.

5）. <u>Handsets with built-in Ev-Do</u>

For handsets with Ev-Do capabilities, the 3G SAR test reduction procedure is applied to Ev-Do Rev. 0 with 1x RTT RC3 as the primary mode to determine body-worn accessory test requirements. Otherwise, body-worn accessory SAR is required for Rev. 0, at 153.6 kbps, using the highest reported SAR configuration for body-worn accessory exposure in RC3.

The 3G SAR test reduction procedure is applied separately to Rev. A and Rev. B, with Rev. 0 as the primary mode to determine body-worn accessory SAR test requirements. When SAR is not required for Rev. 0, the 3G SAR test reduction is applied with 1x RTT RC3 as the primary mode. Otherwise, SAR is required for Rev. A or Rev. B, with a Reverse Data Channel payload size of 4096 bits and a Termination Target of 16 slots defined for Subtype 2 and 3 Physical Layer configurations, using the highest reported SAR configuration for body-worn accessory exposure in Rev. 0 or RC3, as appropriate.

A Forward Traffic Channel data rate corresponding to the 2-slot version of 307.2 kbps with ACK Channel transmitting in all slots is configured in the downlink for Rev. 0, Rev. A and Rev. B

7.2.3 WCDMA 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）. Head SAR

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. Otherwise, SAR is measured for 12.2 kbps AMR in 3.4 kbps SRB (signaling radio bearer) using the highest reported SAR configuration in 12.2 kbps RMC for head exposure

3）. Body SAR

SAR for body 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. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreaing code or DPDCHn, for the highest reported body-worn accessory exposure SAR configuration in 12.2 kbps RMC. When more than 2 DPDCHn are supported by the handset, it may be necessary to configure additional DPDCHn using FTM (Factory Test Mode) or other chipset based test approaches with parameters similar to those used in 384 kbps and 768 kbps RMC.

4）. HSDPA / HSUPA / DC-HSDPA

According to KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA

a) HSDPA

HSDPA is configured according to the applicable UE category of a test device. The number of HS-DSCH/HS-PDSCHs, HARQ 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 conditions, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4 ms and a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors(βc, βd), and HS-DPCCH power offset parameters (ΔACK, ΔNACK, ΔCQI) are set according to values indicated in the following table The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.

Sub-test	βc	Bd	βd(SF)	βc/βd	βhs	CM(dB)	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

Note1: △ACK, △NACK and △CQI= 8 Ahs = βhs/βc=30/15 βhs=30/15*βc
Note2:For the HS-DPCCH power mask requirement test in clause 5.2C,5.7A,and the Error Vector Magnitude(EVM) with HS-DPCCH test in clause 5.13.1.A,and HSDPA EVM with phase discontinuity in clause 5.13.1AA, △ACK and △NACK= 8 (Ahs=30/15) with βhs=30/15*βc,and △CQI=
7 (Ahs=24/15) with βhs=24/15*βc.
Note3: CM=1 forβc/βd =12/15, βhs/βc=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.

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

HS-DSCH Category	Maximum HS-DSCH Codes Received	Minimum Inter-TTI Interval	MaximumH S-DSCH Transport BlockBits/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 7： HSDPA UE category

b) HSUPA

Due to inner loop power control requirements in HSUPA, 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 HSUPA should be configured according to the values indicated below as well as other applicable procedures described in the „WCDMA Handset" and „Release 5 HSUPA Data Device" sections of 3G device.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}(1)	β_{ec}	β_{ed}	β_{ec} (SF)	β_{ed} (code)	CM(2) (dB)	MPR (dB)	AG(4) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}:47/15 β_{ed2}:47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15(4)	15/15(4)	64	15/15(4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

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

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference

Note 3 : For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$

Note 4 : For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$

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

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

Table 8： Subtests for UMTS Release 6 HSUPA

UE E-DCH Category	Maximum E-DCH Codes Transmitted	Number of HARQ Processes	E-DCH TTI(ms)	Minimum Speading Factor	Maximum E-DCH Transport Block Bits	Max Rate (Mbps)
1	1	4	10	4	7110	0.7296
2	2	8	2	4	2798	1.4592
	2	4	10	4	14484	
3	2	4	10	4	14484	1.4592
4	2	8	2	2	5772	2.9185
	2	4	10	2	20000	2.00
5	2	4	10	2	20000	2.00
6 (No DPDCH)	4	8	10	2SF2&2SF4	11484	5.76
	4	4	2		20000	2.00
7 (No DPDCH)	4	8	2	2SF2&2SF4	22996	?
	4	4	10		20000	?

NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4.UE categories 1 to 6 support QPSK only. UE category 7 supports QPSK and 16QAM.(TS25.306-7.3.0).

Table 9： HSUPA UE category

c) DC-HSDPA

SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel. 5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a Second serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.
The following tests were completed according to procedures in section 7.3.13 of 3GPP TS 34.108 v9.5.0.
A summary of these settings are illustrated below:
Downlink Physical Channels are set as per 3GPP TS34.121-1 v9.0.0 E.5.0

Table E.5.0: Levels for HSDPA connection setup

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

Call is set up as per 3GPP TS34.108 v9.5.0 sub clause 7.3.13.
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 10： 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.

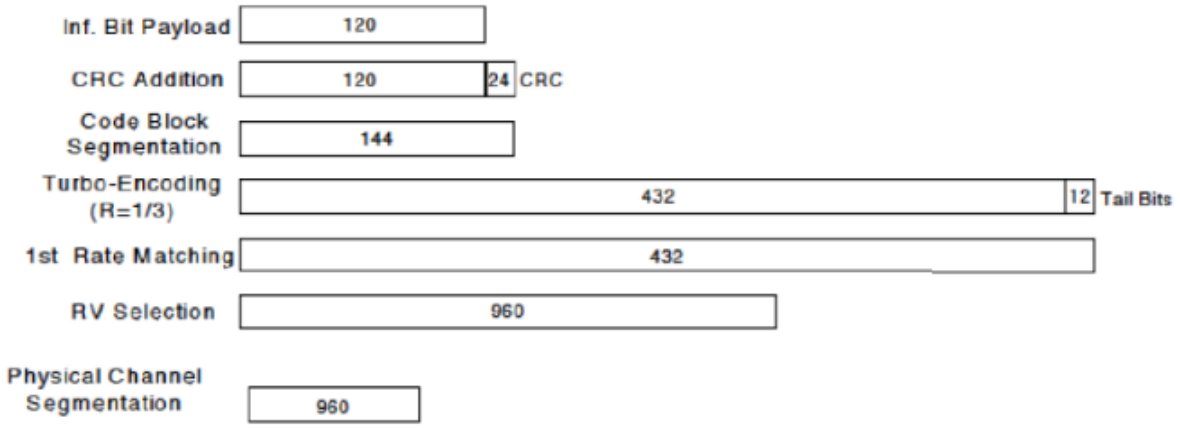


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

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

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

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

Note 3: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$

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

Note:

1. The Dual Carriers transmission only applies to HSDPA physical channels
2. The Dual Carriers belong to the same Node and are on adjacent carriers.
3. The Dual Carriers do not support MIMO to serve UEs configured for dual cell operation
4. The Dual Carriers operate in the same frequency band.
5. The device doesn't support the modulation of 16QAM in uplink but 64QAM in downlink for DC-HSDPA mode.
6. The device doesn't support carrier aggregation for it just can operate in Release 8.

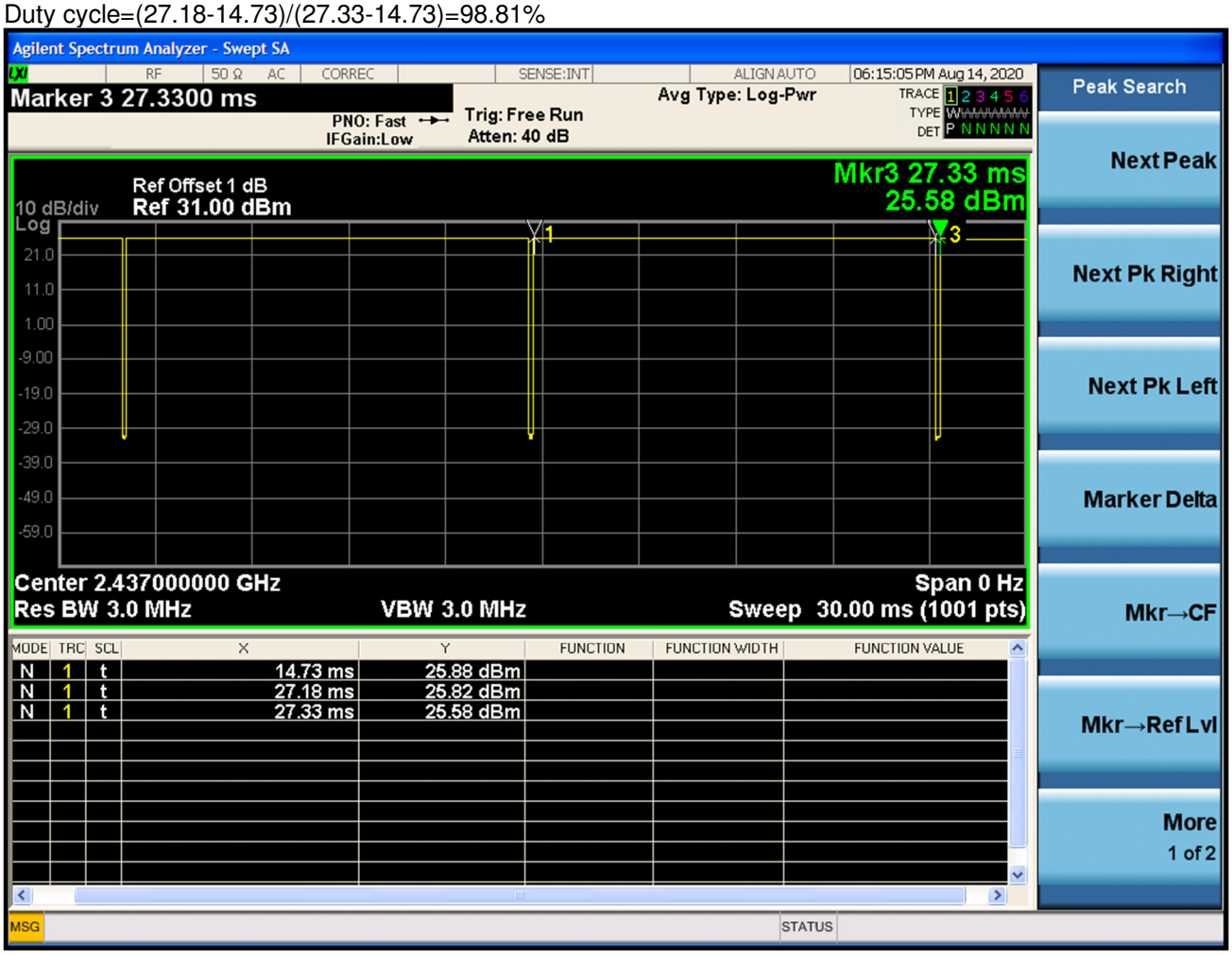
7.2.4 WiFi Test Configuration

A Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools for SAR measurement.

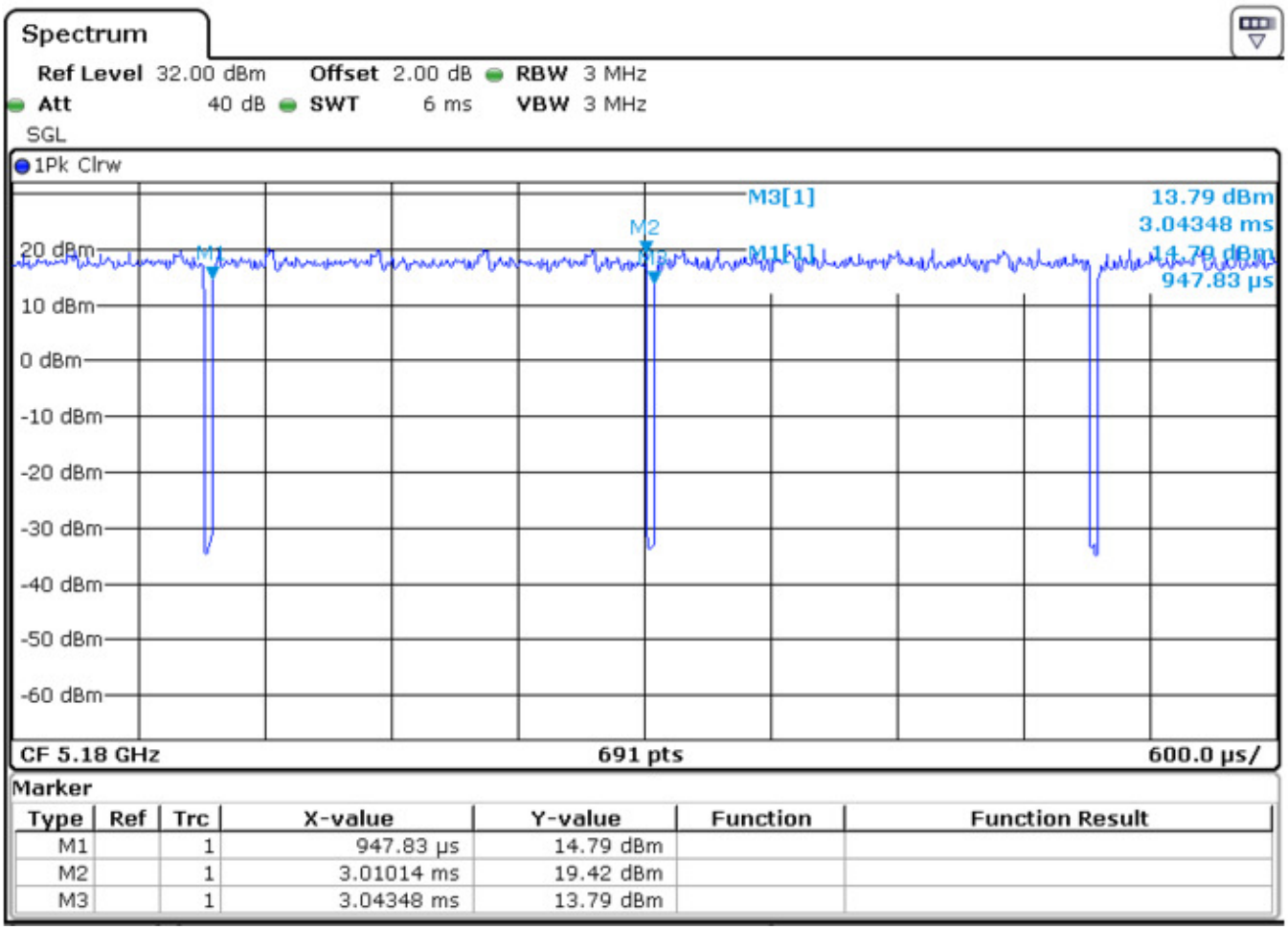
7.2.4.1 Duty cycle

1) Wi-Fi 2.4GHz 802.11b:

Duty cycle=(27.18-14.73)/(27.33-14.73)=98.81%



2) Wi-Fi 5GHz 802.11a:
Duty cycle=3.01014/3.04348=98.90%



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	947.83 µs	14.79 dBm		
M2		1	3.01014 ms	19.42 dBm		
M3		1	3.04348 ms	13.79 dBm		

7.2.4.2 Initial Test Position SAR Test Reduction Procedure

DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures. The initial test position procedure is described in the following:

1）. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other (remaining) test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band. SAR is also not required for that exposure configuration in the subsequent test configuration(s).
2）. When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest extrapolated or estimated 1-g SAR conditions determined by area scans or next closest/smallest test separation distance and maximum RF coupling test positions based on manufacturer justification, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg or all required test positions (left, right, touch, tilt or subsequent surfaces and edges) are tested.
3）. For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested. a) Additional power measurements may be required for this step, which should be limited to those necessary for identifying the subsequent highest output power channels.

7.2.4.3 Initial Test Configuration Procedures

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. SAR test reduction for subsequent highest output test channels is determined according to *reported* SAR of the initial test configuration.
For next to the ear, hotspot mode and UMC mini-tablet exposure configurations where multiple test positions are required, the initial test position procedure is applied to minimize the number of test positions required for SAR measurement using the initial test configuration transmission mode. For fixed exposure conditions that do not have multiple SAR test positions, SAR is measured in the transmission mode determined by the initial test configuration.
When the *reported* SAR of the initial test configuration is > 0.8 W/kg, SAR measurement is required for subsequent next highest measured output power channel(s) in the initial test configuration until *reported* SAR is ≤ 1.2 W/kg or all required channels are tested.

7.2.4.4 Subsequent Test Configuration Procedures

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. The initial test position procedure is applied to next to the ear, UMPC mini-tablet and hotspot mode configurations. When the same maximum output power is specified for multiple transmission modes, additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. The subsequent test configuration and SAR measurement procedures are described in the following.

1）. When SAR test exclusion provisions of KDB Publication 447498 are applicable and SAR measurement is not required for the initial test configuration, SAR is also not required for the next highest maximum output power transmission mode subsequent test configuration(s) in that frequency band or aggregated band and exposure configuration.

2）. When the highest *reported* SAR for the initial test configuration (when applicable, include subsequent highest output channels), 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.

3）. The number of channels in the initial test configuration and subsequent test configuration can be different due to differences in channel bandwidth. When SAR measurement is required for a subsequent test configuration and the channel bandwidth is smaller than that in the initial test configuration, all channels in the subsequent test configuration that overlap with the larger bandwidth channel tested in the initial test configuration should be used to determine the highest maximum output power channel. This step requires additional power measurement to identify the highest maximum output power channel in the subsequent test configuration to determine SAR test reduction.

a) SAR should first be measured for the channel with highest measured output power in the subsequent test configuration.

b) SAR for subsequent highest measured maximum output power channels in the subsequent test configuration is required only when the *reported* SAR of the preceding higher maximum output power channel(s) in the subsequent test configuration is > 1.2 W/kg or until all required channels are tested. i) For channels with the same measured maximum output power, SAR should be measured using the channel closest to the center frequency of the larger channel bandwidth channel in the initial test configuration.

4）. SAR measurements for the remaining highest specified maximum output power OFDM transmission mode configurations that have not been tested in the initial test configuration (highest maximum output) or subsequent test configuration(s) (subsequent next highest maximum output power) is determined by recursively applying the subsequent test configuration procedures in this section to the remaining configurations according to the following:

a) replace “subsequent test configuration” with “next subsequent test configuration” (i.e., subsequent next highest specified maximum output power configuration)

b) replace “initial test configuration” with “all tested higher output power configurations”

7.2.4.5 2.4 GHz WiFi SAR 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. When SAR measurement is required for an OFDM configuration, the initial test configuration, subsequent test configuration and initial test position procedures are applied. The SAR test exclusion requirements for 802.11g/n OFDM configurations are described in following.

- **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 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.

- **2.4 GHz 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, including sub-sections). 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.

- **SAR Test Requirements for OFDM configurations**

When SAR measurement is required for 802.11 g/n OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. 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.

7.2.4.6 5 GHz WiFi SAR Procedures

- **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.

- **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, 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. 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.

- **OFDM Transmission Mode SAR Test Configuration and Channel Selection Requirements**
The initial test configuration for 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined according to the following steps applied sequentially.
  1) The largest channel bandwidth configuration is selected among the multiple configurations with the same specified maximum output power.
  2) If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.
  3) If multiple configurations have the same specified maximum output power, largest channel bandwidth and lowest order modulation, the lowest data rate configuration among these configurations is selected.
  4) When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n. After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following. These channel selection procedures apply to both the initial test configuration and subsequent test configuration(s), with respect to the default power measurement procedures or additional power measurements required for further SAR test reduction. The same procedures also apply to subsequent highest output power channel(s) selection.
     a) The channel closest to mid-band frequency is selected for SAR measurement.
     b) For channels with equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

- **SAR Test Requirements for OFDM configurations**

When SAR measurement is required for 802.11 a/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.

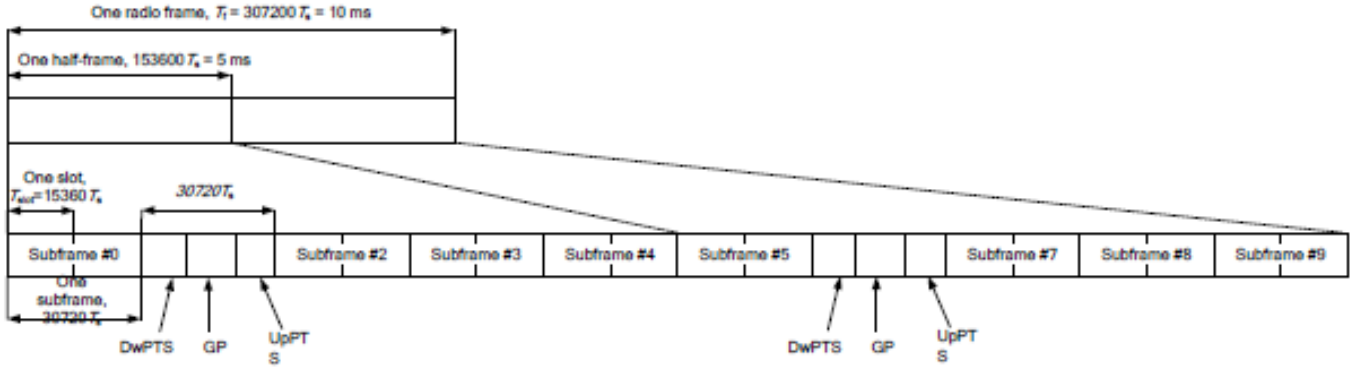
7.2.5 LTE Test Configuration

LTE modes were tested according to FCC KDB 941225 D05 publication. Please see notes after the tabulated SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The Anritsu MT8821C was used for LTE output power measurements and SAR testing. Max power control was used so the UE transmits with maximum output power during SAR testing. SAR must be measured with the maximum TTI (transmit time interval) supported by the device in each LTE configuration.

TDD LTE test consideration

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.
SAR was tested with the highest transmission duty factor (63.33%) using Uplink-downlink configuration 0 and Special subframe configuration 7.
LTE TDD Band support 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.

Frame structure type 2:



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.Ts	2192.Ts	2560.Ts	7680.Ts	2192.Ts	2560.Ts
1	19760.Ts			20480.Ts		
2	21952.Ts			23040.Ts		
3	24144.Ts			25600.Ts		
4	26336.Ts			7680.Ts	4384.Ts	5120.Ts
5	6592.Ts	4384.Ts	5120.Ts	20480.Ts		
6	19760.Ts			23040.Ts		
7	21952.Ts			25600.Ts		
8	24144.Ts			-	-	-
9	13168.Ts			-	-	-

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

Calculated Duty Cycle=[Extended cyclic prefix in uplink x (Ts) x # of S + # of U]/10ms

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

A) Spectrum Plots for RB Configurations

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

B) MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

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

C) A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

D) Largest channel bandwidth standalone SAR test requirements

1) QPSK with 1 RB allocation

Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power 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.

2) QPSK with 50% RB allocation

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

3) QPSK with 100% RB allocation

For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in 1) and 2) are ≤ 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.

4) Higher order modulations

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

E) Other channel bandwidth standalone SAR test requirements

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

8 Test Result

8.1 Measurement of RF conducted Power

Note: The detailed conducted power table can refer to Appendix E.

8.1.1 Conducted Power of GSM

Note:
1）. CMW500 measures GSM peak and average output power for active timeslots. For SAR the time based average power is relevant. The difference in between depends on the duty cycle of the TDMA signal:

No. of timeslots	1	2	3	4
Duty Cycle	1:8.3	1:4.15	1:2.77	1:2.075
Time based avg. power compared to slotted avg. power	-9.19	-6.18	-4.42	-3.17

2）. The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots. The calculated method is shown as below:
Frame-averaged power = 10 x log (Burst-averaged power mW x Slot used / 8
3）. When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel must be used

8.1.2 Conducted Power of WCDMA

Note:
1) when the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel must be used.

8.1.3 Conducted Power of CDMA

8.1.4 Conducted Power of LTE

8.1.5 Conducted Power of Downlink LTE CA

The following conducted power measurement results of downlink LTE carrier aggregation are provided to quantify downlink only carrier aggregation SAR test exclusion. Uplink maximum output power is measured with downlink carrier aggregation active, using the channel with highest measured maximum output power when downlink carrier aggregation is inactive, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.
Power test equipment: Anritsu Radio Communication Analyzer MT8821C were used.

8.1.5.1 Conducted Power of Downlink LTE CA

In this section, the following conducted power measurement results of downlink LTE carrier aggregation are provided to quantify downlink only carrier aggregation SAR test exclusion per KDB 941225 D05A.Uplink maximum output power is measured with downlink carrier aggregation active, using the channel with highest measured maximum output power when downlink carrier aggregation is inactive, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive, therefore SAR evaluation with downlink carrier aggregation can be excluded.

Power test equipment: Anritsu Radio Communication Analyzer MT8821C

The possible downlink LTE CA combinations supported by this device are as below tables per 3GPP TS 36.101 V15.4.0. The detailed conducted power measurement results of downlink LTE CA are provided in the SAR report per 3GPP TS 36.521-1 V14.4.0. According to KDB 941225 D05A, the downlink only carrier aggregation conditions for this device can be excluded from SAR testing.

The conducted power measurement results of downlink LTE CA Conducted Power are as below, so the downlink only carrier aggregation conditions for this device can be excluded from SAR testing

In applying the existing power measurement procedures for DL CA SAR test exclusion, the configurations in the table as below:

1 band / 2CC	2 bands / 2CC
CA_2C	CA_4A-12A
CA_41C	CA_4A-13A
CA_66C	CA_4A-71A
CA_66B	CA_2A-4A
CA_2A-2A	CA_2A-12A
CA_4A-4A	CA_2A-5A
CA_4A-5A	CA_2A-66A
CA_25A-25A	CA_2A-71A
CA_41A-41A	CA_12A-66A
CA_66A-66A	CA_5A-66A
	CA_66A-71A
	CA_13A-66A
	CA_25A-26A
	CA_25A-41A

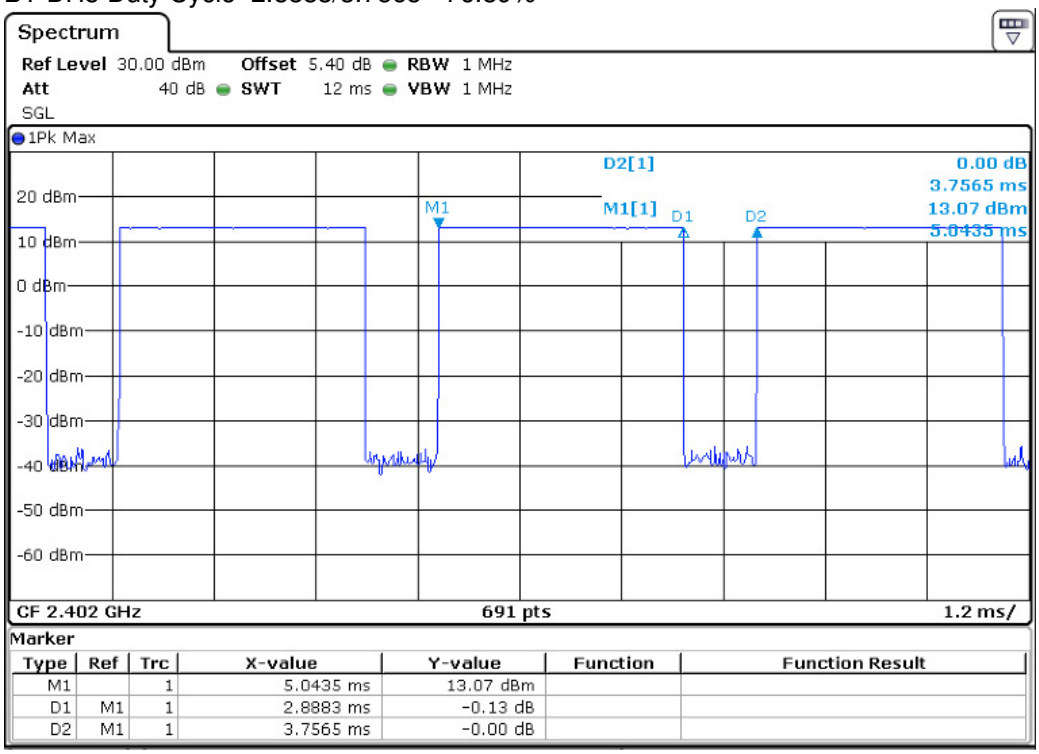
Note:
The downlink LTE CA SAR test is not required since the maximum output power for downlink LTE CA was not more than 0.25dB higher than the maximum output power for without downlink LTE CA

8.1.6 Conducted Power of WIFI

Note:
a) Power must be measured at each transmit antenna port according to the DSSS and OFDM transmission configurations in each standalone and aggregated frequency band.
b) Power measurement is required for the transmission mode configuration with the highest maximum output power specified for production units.
1) When the same highest maximum output power specification applies to multiple transmission modes, the largest channel bandwidth configuration with the lowest order modulation and lowest data rate is measured.
2) When the same highest maximum output power is specified for multiple largest channel bandwidth configurations with the same lowest order modulation or lowest order modulation and lowest data rate, power measurement is required for all equivalent 802.11 configurations with the same maximum output power.
c) For each transmission mode configuration, power must be measured for the highest and lowest channels; and at the mid-band channel(s) when there are at least 3 channels. For configurations with multiple mid-band channels, due to an even number of channels, both channels should be measured.

8.1.7 Conducted Power of BT

BT DH5 Duty Cycle=2.8883/3.7565 =76.89%



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.0435 ms	13.07 dBm		
D1	M1	1	2.8883 ms	-0.13 dB		
D2	M1	1	3.7565 ms	-0.00 dB		

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

8.2 Stand-alone SAR test evaluation

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and Product specific 10g SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Test Exclusion Threshold condition is satisfied. These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.

Freq. Band	Frequency (GHz)	Position	Average Power		Test Separation (mm)	Calculate Value	Exclusion Threshold	Exclusion (Y/N)
			dBm	mW				
Wi-Fi 2.4G	2.472	Head	17.0	50.12	5	15.76	3	N
		Body-worn	18.0	63.10	15	6.61	3	N
		Hotspot	18.0	63.10	10	9.92	3	N
Wi-Fi 5G	5.85	Head	13.0	19.95	5	9.65	3	N
		Body-worn	15.0	31.62	15	5.10	3	N
		Hotspot	15.0	31.62	10	7.65	3	N
Bluetooth	2.48	Head	13.0	19.95	5	6.28	3	N
		Body-worn	13.0	19.95	15	2.09	3	Y
		Hotspot	13.0	19.95	10	3.14	3	N

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where
• f(GHz) is the RF channel transmit frequency in GHz
• Power and distance are rounded to the nearest mW and mm before calculation
• The result is rounded to one decimal place for comparison

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

8.3 Measurement of SAR Data

8.3.1 SAR Result of GSM850

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	GSM	190/836.6	1:8.3	0.174	-0.12	32.25	33.80	1.429	0.249	22.1
Left tilted	GSM	190/836.6	1:8.3	0.106	-0.10	32.25	33.80	1.429	0.151	22.1
Right cheek	GSM	190/836.6	1:8.3	0.203	0.07	32.25	33.80	1.429	**0.290**	22.1
Right tilted	GSM	190/836.6	1:8.3	0.124	0.15	32.25	33.80	1.429	0.177	22.1
Right cheek	GSM	128/824.2	1:8.3	0.186	0.09	32.49	33.80	1.352	0.251	22.1
Right cheek	GSM	251/848.8	1:8.3	0.204	0.14	32.64	33.80	1.306	0.266	22.1
Body worn Test data(Separate 15mm)										
Front side	GSM	190/836.6	1:8.3	0.164	0.11	32.25	33.80	1.429	0.234	22.1
Back side	GSM	190/836.6	1:8.3	0.194	0.04	32.25	33.80	1.429	0.277	22.1
Back side	GSM	128/824.2	1:8.3	0.208	0.05	32.49	33.80	1.352	**0.281**	22.1
Back side	GSM	251/848.8	1:8.3	0.165	0.04	32.64	33.80	1.306	0.216	22.1
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.221	-0.09	27.79	27.80	1.002	0.222	22.1
Back side	GPRS 4TS	190/836.6	1:2.075	0.424	-0.17	27.79	27.80	1.002	**0.425**	22.1
Left side	GPRS 4TS	190/836.6	1:2.075	0.144	0.11	27.79	27.80	1.002	0.144	22.1
Right side	GPRS 4TS	190/836.6	1:2.075	0.213	-0.15	27.79	27.80	1.002	0.213	22.1
Bottom side	GPRS 4TS	190/836.6	1:2.075	0.280	0.10	27.79	27.80	1.002	0.281	22.1
Back side	GPRS 4TS	128/824.2	1:2.075	0.356	0.04	27.74	27.80	1.014	0.361	22.1
Back side	GPRS 4TS	251/848.8	1:2.075	0.417	0.05	27.75	27.80	1.012	0.422	22.1

Table 11： SAR of GSM850 for Head and Body

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB648474D04, 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.

8.3.2 SAR Result of GSM1900

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	GSM	661/1880	1:8.3	0.070	-0.08	29.67	30.80	1.297	0.090	22.3
Left tilted	GSM	661/1880	1:8.3	0.062	0.12	29.67	30.80	1.297	0.080	22.3
Right cheek	GSM	661/1880	1:8.3	0.064	0.15	29.67	30.80	1.297	0.083	22.3
Right tilted	GSM	661/1880	1:8.3	0.080	-0.03	29.67	30.80	1.297	0.103	22.3
Right tilted	GSM	512/1850.2	1:8.3	0.101	-0.07	29.66	30.80	1.300	**0.131**	22.3
Right tilted	GSM	810/1909.8	1:8.3	0.098	-0.03	29.59	30.80	1.321	0.129	22.3
Body worn Test data(Separate 15mm)										
Front side	GSM	661/1880	1:8.3	0.090	-0.10	29.67	30.80	1.297	0.117	22.3
Back side	GSM	661/1880	1:8.3	0.158	-0.03	29.67	30.80	1.297	0.205	22.3
Back side	GSM	512/1850.2	1:8.3	0.196	-0.03	29.66	30.80	1.300	0.255	22.3
Back side	GSM	810/1909.8	1:8.3	0.210	-0.04	29.59	30.80	1.321	**0.277**	22.3
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.187	0.08	24.75	24.80	1.012	0.189	22.3
Back side	GPRS 4TS	661/1880	1:2.075	0.370	-0.07	24.75	24.80	1.012	**0.374**	22.3
Left side	GPRS 4TS	661/1880	1:2.075	0.173	0.06	24.75	24.80	1.012	0.175	22.3
Right side	GPRS 4TS	661/1880	1:2.075	0.058	0.04	24.75	24.80	1.012	0.059	22.3
Bottom side	GPRS 4TS	661/1880	1:2.075	0.262	0.07	24.75	24.80	1.012	0.265	22.3
Back side	GPRS 4TS	512/1850.2	1:2.075	0.296	-0.03	24.72	24.80	1.019	0.302	22.3
Back side	GPRS 4TS	810/1909.8	1:2.075	0.340	-0.04	24.69	24.80	1.026	0.349	22.3

Table 12： SAR of GSM1900 for Head and Body.

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB648474D04, 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.

8.3.3 SAR Result of WCDMA Band II

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	RMC	9400/1880	1:1	0.233	-0.03	23.31	24.80	1.409	0.328	22.3
Left tilted	RMC	9400/1880	1:1	0.154	0.04	23.31	24.80	1.409	0.217	22.3
Right cheek	RMC	9400/1880	1:1	0.163	-0.03	23.31	24.80	1.409	0.230	22.3
Right tilted	RMC	9400/1880	1:1	0.188	0.01	23.31	24.80	1.409	0.265	22.3
Left cheek	RMC	9262/1852.4	1:1	0.255	-0.10	23.48	24.80	1.355	0.346	22.3
Left cheek	RMC	9538/1907.6	1:1	0.299	0.03	23.07	24.80	1.489	**0.445**	22.3
Body Worn Test data(Separate 15mm)										
Front side	RMC	9400/1880	1:1	0.199	-0.01	23.31	24.80	1.409	0.280	22.3
Back side	RMC	9400/1880	1:1	0.247	0.05	23.31	24.80	1.409	0.348	22.3
Back side	RMC	9262/1852.4	1:1	0.338	-0.05	23.48	24.80	1.355	0.458	22.3
Back side	RMC	9538/1907.6	1:1	0.402	0.01	23.07	24.80	1.489	**0.599**	22.3
Hotspot Test data(Separate 10mm)										
Front side	RMC	9400/1880	1:1	0.449	0.03	23.31	24.80	1.409	0.633	22.3
Back side	RMC	9400/1880	1:1	0.574	-0.01	23.31	24.80	1.409	0.809	22.3
Left side	RMC	9400/1880	1:1	0.437	-0.07	23.31	24.80	1.409	0.616	22.3
Right side	RMC	9400/1880	1:1	0.152	0.02	23.31	24.80	1.409	0.214	22.3
Bottom side	RMC	9400/1880	1:1	0.466	-0.06	23.31	24.80	1.409	0.657	22.3
Back side	RMC	9262/1852.4	1:1	0.634	-0.10	23.48	24.80	1.355	0.859	22.3
Back side	RMC	9538/1907.6	1:1	0.579	-0.03	23.07	24.80	1.489	**0.862**	22.3

Table 13： SAR of WCDMA Band II for Head and Body.

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB648474D04, 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.

8.3.4 SAR Result of WCDMA Band IV

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	RMC	1412/1732.4	1:1	0.160	0.04	23.85	24.80	1.245	0.199	22.2
Left tilted	RMC	1412/1732.4	1:1	0.089	0.01	23.85	24.80	1.245	0.111	22.2
Right cheek	RMC	1412/1732.4	1:1	0.165	-0.10	23.85	24.80	1.245	0.205	22.2
Right tilted	RMC	1412/1732.4	1:1	0.094	0.03	23.85	24.80	1.245	0.117	22.2
Right cheek	RMC	1312/1712.4	1:1	0.186	-0.07	23.80	24.80	1.259	**0.234**	22.2
Right cheek	RMC	1513/1752.6	1:1	0.175	0.08	23.79	24.80	1.262	0.221	22.2
Body Worn Test data(Separate 15mm)										
Front side	RMC	1412/1732.4	1:1	0.193	-0.06	23.85	24.80	1.245	0.240	22.2
Back side	RMC	1412/1732.4	1:1	0.254	-0.01	23.85	24.80	1.245	0.316	22.2
Back side	RMC	1312/1712.4	1:1	0.263	-0.02	23.80	24.80	1.259	0.331	22.2
Back side	RMC	1513/1752.6	1:1	0.307	-0.03	23.79	24.80	1.262	**0.387**	22.2
Hotspot Test data(Separate 10mm)										
Front side	RMC	1412/1732.4	1:1	0.347	-0.03	23.85	24.80	1.245	0.432	22.2
Back side	RMC	1412/1732.4	1:1	0.412	-0.07	23.85	24.80	1.245	0.513	22.2
Left side	RMC	1412/1732.4	1:1	0.275	0.04	23.85	24.80	1.245	0.342	22.2
Right side	RMC	1412/1732.4	1:1	0.103	0.06	23.85	24.80	1.245	0.128	22.2
Bottom side	RMC	1412/1732.4	1:1	0.443	-0.03	23.85	24.80	1.245	0.551	22.2
Bottom side	RMC	1312/1712.4	1:1	0.434	0.13	23.80	24.80	1.259	0.546	22.2
Bottom side	RMC	1513/1752.6	1:1	0.450	-0.03	23.79	24.80	1.262	**0.568**	22.2

Table 14： SAR of WCDMA Band IV for Head and Body.

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB648474D04, 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.

8.3.5 SAR Result of WCDMA Band V

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	RMC	4182/836.4	1:1	0.179	0.12	23.47	24.80	1.358	0.243	22.1
Left tilted	RMC	4182/836.4	1:1	0.110	0.13	23.47	24.80	1.358	0.149	22.1
Right cheek	RMC	4182/836.4	1:1	0.222	0.15	23.47	24.80	1.358	0.302	22.1
Right tilted	RMC	4182/836.4	1:1	0.123	0.11	23.47	24.80	1.358	0.167	22.1
Right cheek	RMC	4132/826.4	1:1	0.192	0.07	23.20	24.80	1.445	0.278	22.1
Right cheek	RMC	4233/846.6	1:1	0.221	0.02	23.31	24.80	1.409	**0.311**	22.1
Body Worn Test data(Separate 15mm)										
Front side	RMC	4182/836.4	1:1	0.162	0.15	23.47	24.80	1.358	0.220	22.1
Back side	RMC	4182/836.4	1:1	0.262	-0.07	23.47	24.80	1.358	**0.356**	22.1
Back side	RMC	4132/826.4	1:1	0.201	-0.02	23.20	24.80	1.445	0.291	22.1
Back side	RMC	4233/846.6	1:1	0.211	-0.07	23.31	24.80	1.409	0.297	22.1
Hotspot Test data(Separate 10mm)										
Front side	RMC	4182/836.4	1:1	0.187	-0.08	23.47	24.80	1.358	0.254	22.1
Back side	RMC	4182/836.4	1:1	0.316	0.03	23.47	24.80	1.358	0.429	22.1
Left side	RMC	4182/836.4	1:1	0.125	0.13	23.47	24.80	1.358	0.170	22.1
Right side	RMC	4182/836.4	1:1	0.197	0.09	23.47	24.80	1.358	0.268	22.1
Bottom side	RMC	4182/836.4	1:1	0.238	0.02	23.47	24.80	1.358	0.323	22.1
Back side	RMC	4132/826.4	1:1	0.306	-0.18	23.20	24.80	1.445	0.442	22.1
Back side	RMC	4233/846.6	1:1	0.398	0.02	23.31	24.80	1.409	**0.561**	22.1

Table 15： SAR of WCDMA Band V for Head and Body.

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB648474D04, 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.

8.3.6 SAR Result of CDMA BC0

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	RC3+SO55	384/836.52	1:1	0.175	-0.11	24.31	24.80	1.119	0.196	22.1
Left tilted	RC3+SO55	384/836.52	1:1	0.105	0.10	24.31	24.80	1.119	0.118	22.1
Right cheek	RC3+SO55	384/836.52	1:1	0.179	0.02	24.31	24.80	1.119	0.200	22.1
Right tilted	RC3+SO55	384/836.52	1:1	0.118	0.14	24.31	24.80	1.119	0.132	22.1
Right cheek	RC3+SO55	1013/824.7	1:1	0.148	0.03	24.25	24.80	1.135	0.168	22.1
Right cheek	RC3+SO55	777/848.31	1:1	0.191	0.03	24.35	24.80	1.109	**0.212**	22.1
Body Worn Test data(Separate 15mm)										
Front side	RC3+SO32	384/836.52	1:1	0.153	-0.09	24.25	24.80	1.135	0.174	22.1
Back side	RC3+SO32	384/836.52	1:1	0.235	0.03	24.25	24.80	1.135	**0.267**	22.1
Back side	RC3+SO32	1013/824.7	1:1	0.221	-0.08	24.32	24.80	1.117	0.247	22.1
Back side	RC3+SO32	777/848.31	1:1	0.200	0.06	24.32	24.80	1.117	0.223	22.1
Hotspot Test data(Separate 10mm)										
Front side	RC3+SO32	384/836.52	1:1	0.177	-0.12	24.25	24.80	1.135	0.201	22.1
Back side	RC3+SO32	384/836.52	1:1	0.381	-0.07	24.25	24.80	1.135	0.432	22.1
Left side	RC3+SO32	384/836.52	1:1	0.110	0.13	24.25	24.80	1.135	0.125	22.1
Right side	RC3+SO32	384/836.52	1:1	0.181	0.11	24.25	24.80	1.135	0.205	22.1
Bottom side	RC3+SO32	384/836.52	1:1	0.221	0.05	24.25	24.80	1.135	0.251	22.1
Back side	RC3+SO32	1013/824.7	1:1	0.322	-0.02	24.32	24.80	1.117	0.360	22.1
Back side	RC3+SO32	777/848.31	1:1	0.413	-0.02	24.32	24.80	1.117	**0.461**	22.1
Back side	EVDO RTAP 153.6Kbps	777/848.31	1:1	0.357	0.03	24.08	24.80	1.180	0.421	22.1
Back side	EVDO RETAP 4096Bits	777/848.31	1:1	0.366	0.02	24.10	24.80	1.175	0.430	22.1

Table 16：SAR of CDMA BC0 for Head and Body.

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB648474D04, 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.

8.3.7 SAR Result of CDMA BC1

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	RC3+SO55	600/1880	1:1	0.289	-0.03	23.92	24.80	1.225	0.354	22.3
Left tilted	RC3+SO55	600/1880	1:1	0.160	0.03	23.92	24.80	1.225	0.196	22.3
Right cheek	RC3+SO55	600/1880	1:1	0.207	0.02	23.92	24.80	1.225	0.253	22.3
Right tilted	RC3+SO55	600/1880	1:1	0.176	0.01	23.92	24.80	1.225	0.216	22.3
Left cheek	RC3+SO55	25/1851.25	1:1	0.279	-0.01	24.50	24.80	1.072	0.299	22.3
Left cheek	RC3+SO55	1175/1908.75	1:1	0.333	-0.06	24.15	24.80	1.161	**0.387**	22.3
Body Worn Test data(Separate 15mm)										
Front side	RC3+SO32	600/1880	1:1	0.262	0.01	23.93	24.80	1.222	0.320	22.3
Back side	RC3+SO32	600/1880	1:1	0.421	-0.03	23.93	24.80	1.222	0.514	22.3
Back side	RC3+SO32	25/1851.25	1:1	0.396	-0.13	24.40	24.80	1.096	0.434	22.3
Back side	RC3+SO32	1175/1908.75	1:1	0.457	-0.01	24.03	24.80	1.194	**0.546**	22.3
Hotspot Test data(Separate 10mm)										
Front side	RC3+SO32	600/1880	1:1	0.514	0.03	23.93	24.80	1.222	0.628	22.3
Back side	RC3+SO32	600/1880	1:1	0.765	-0.05	23.93	24.80	1.222	0.935	22.3
Left side	RC3+SO32	600/1880	1:1	0.468	0.01	23.93	24.80	1.222	0.572	22.3
Right side	RC3+SO32	600/1880	1:1	0.169	-0.03	23.93	24.80	1.222	0.206	22.3
Bottom side	RC3+SO32	600/1880	1:1	0.590	-0.02	23.93	24.80	1.222	0.721	22.3
Back side	RC3+SO32	25/1851.25	1:1	0.853	0.16	24.40	24.80	1.096	0.935	22.3
Back side-repeat	RC3+SO32	25/1851.25	1:1	0.845	-0.16	24.40	24.80	1.096	0.927	22.3
Back side	RC3+SO32	1175/1908.75	1:1	0.772	-0.04	24.03	24.80	1.194	0.922	22.3
Back side	EVDO RTAP 153.6Kbps	25/1851.25	1:1	0.844	-0.06	24.32	24.80	1.117	0.943	22.3
Back side	EVDO RTAP 153.6Kbps	600/1880	1:1	0.763	-0.05	23.73	24.80	1.279	0.976	22.3
Back side	EVDO RTAP 153.6Kbps	1175/1908.75	1:1	0.763	0.02	24.09	24.80	1.178	0.899	22.3
Back side	EVDO RETAP 4096Bits	25/1851.25	1:1	0.849	0.13	24.23	24.80	1.140	0.968	22.3
Back side	EVDO RETAP 4096Bits	600/1880	1:1	0.755	-0.04	23.68	24.80	1.294	**0.977**	22.3
Back side	EVDO RETAP 4096Bits	1175/1908.75	1:1	0.753	0.03	24.11	24.80	1.172	0.883	22.3

Table 17：SAR of CDMA BC1 for Head and Body.

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB648474D04, 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.

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8.3.8 SAR Result of CDMA BC10

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	RC3+SO55	580/820.5	1:1	0.147	0.12	24.25	24.80	1.135	0.167	22.1
Left tilted	RC3+SO55	580/820.5	1:1	0.087	0.11	24.25	24.80	1.135	0.099	22.1
Right cheek	RC3+SO55	580/820.5	1:1	0.149	0.07	24.25	24.80	1.135	**0.169**	22.1
Right tilted	RC3+SO55	580/820.5	1:1	0.098	-0.05	24.25	24.80	1.135	0.111	22.1
Right cheek	RC3+SO55	476/817.9	1:1	0.130	0.03	24.21	24.80	1.146	0.149	22.1
Right cheek	RC3+SO55	684/823.1	1:1	0.147	0.02	24.29	24.80	1.125	0.165	22.1
Body Worn Test data(Separate 15mm)										
Front side	RC3+SO32	580/820.5	1:1	0.144	0.10	24.29	24.80	1.125	0.162	22.1
Back side	RC3+SO32	580/820.5	1:1	0.207	0.11	24.29	24.80	1.125	0.233	22.1
Back side	RC3+SO32	476/817.9	1:1	0.195	-0.01	24.24	24.80	1.138	0.222	22.1
Back side	RC3+SO32	684/823.1	1:1	0.219	0.14	24.31	24.80	1.119	**0.245**	22.1
Hotspot Test data(Separate 10mm)										
Front side	RC3+SO32	580/820.5	1:1	0.166	-0.14	24.29	24.80	1.125	0.187	22.1
Back side	RC3+SO32	580/820.5	1:1	0.301	0.05	24.29	24.80	1.125	0.339	22.1
Left side	RC3+SO32	580/820.5	1:1	0.107	0.12	24.29	24.80	1.125	0.120	22.1
Right side	RC3+SO32	580/820.5	1:1	0.165	0.06	24.29	24.80	1.125	0.186	22.1
Bottom side	RC3+SO32	580/820.5	1:1	0.177	0.03	24.29	24.80	1.125	0.199	22.1
Back side	RC3+SO32	476/817.9	1:1	0.277	0.03	24.24	24.80	1.138	0.315	22.1
Back side	RC3+SO32	684/823.1	1:1	0.317	0.05	24.31	24.80	1.119	**0.355**	22.1
Back side	EVDO RTAP 153.6Kbps	684/823.1	1:1	0.285	-0.03	24.19	24.80	1.151	0.328	22.1
Back side	EVDO RETAP 4096Bits	684/823.1	1:1	0.300	0.01	24.10	24.80	1.175	0.352	22.1

Table 18：SAR of CDMA BC10 for Head and Body.

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB648474D04, 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.

8.3.9 SAR Result of LTE Band 7

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_99	21100/2535	1:1	0.126	-0.02	23.70	24.30	1.148	0.145	22.1
Left tilted	20	QPSK 1RB_99	21100/2535	1:1	0.113	0.07	23.70	24.30	1.148	0.130	22.1
Right cheek	20	QPSK 1RB_99	21100/2535	1:1	0.098	-0.06	23.70	24.30	1.148	0.113	22.1
Right tilted	20	QPSK 1RB_99	21100/2535	1:1	0.079	0.02	23.70	24.30	1.148	0.091	22.1
Left cheek	20	QPSK 1RB_50	20850/2510	1:1	0.091	0.08	23.70	24.30	1.148	0.104	22.1
Left cheek	20	QPSK 1RB_99	21350/2560	1:1	0.135	0.01	23.62	24.30	1.169	**0.158**	22.1
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_50	20850/2510	1:1	0.091	0.01	22.63	23.30	1.167	0.106	22.1
Left tilted	20	QPSK 50RB_50	20850/2510	1:1	0.083	-0.08	22.63	23.30	1.167	0.097	22.1
Right cheek	20	QPSK 50RB_50	20850/2510	1:1	0.074	0.07	22.63	23.30	1.167	0.086	22.1
Right tilted	20	QPSK 50RB_50	20850/2510	1:1	0.032	0.05	22.63	23.30	1.167	0.037	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_99	21100/2535	1:1	0.315	0.03	23.70	24.30	1.148	0.362	22.1
Back side	20	QPSK 1RB_99	21100/2535	1:1	0.174	0.01	23.70	24.30	1.148	0.200	22.1
Front side	20	QPSK 1RB_50	20850/2510	1:1	0.228	0.09	23.70	24.30	1.148	0.262	22.1
Front side	20	QPSK 1RB_99	21350/2560	1:1	0.361	0.06	23.62	24.30	1.169	**0.422**	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_50	20850/2510	1:1	0.161	0.01	22.63	23.30	1.167	0.188	22.1
Back side	20	QPSK 50RB_50	20850/2510	1:1	0.120	0.03	22.63	23.30	1.167	0.140	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_99	21100/2535	1:1	0.443	0.01	23.70	24.30	1.148	0.509	22.1
Back side	20	QPSK 1RB_99	21100/2535	1:1	0.335	0.04	23.70	24.30	1.148	0.385	22.1
Left side	20	QPSK 1RB_99	21100/2535	1:1	0.161	0.07	23.70	24.30	1.148	0.185	22.1
Right side	20	QPSK 1RB_99	21100/2535	1:1	0.124	0.09	23.70	24.30	1.148	0.142	22.1
Bottom side	20	QPSK 1RB_99	21100/2535	1:1	0.668	-0.09	23.70	24.30	1.148	0.767	22.1
Bottom side	20	QPSK 1RB_50	20850/2510	1:1	0.588	0.02	23.70	24.30	1.148	0.675	22.1
Bottom side	20	QPSK 1RB_99	21350/2560	1:1	0.686	-0.07	23.62	24.30	1.169	**0.802**	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_50	20850/2510	1:1	0.296	0.02	22.63	23.30	1.167	0.345	22.1
Back side	20	QPSK 50RB_50	20850/2510	1:1	0.238	0.01	22.63	23.30	1.167	0.278	22.1
Left side	20	QPSK 50RB_50	20850/2510	1:1	0.112	-0.04	22.63	23.30	1.167	0.131	22.1
Right side	20	QPSK 50RB_50	20850/2510	1:1	0.082	0.09	22.63	23.30	1.167	0.096	22.1
Bottom side	20	QPSK 50RB_50	20850/2510	1:1	0.338	0.07	22.63	23.30	1.167	0.394	22.1
Hotspot Test data (Separate 10mm 100%RB)											
Bottom side	20	QPSK 100RB_0	20850/2510	1:1	0.345	0.02	22.57	23.30	1.183	0.408	22.1

Table 19：SAR of LTE Band 7 for Head and Body.

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB648474D04, 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.

8.3.10SAR Result of LTE Band 12

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	10	QPSK 1RB_49	23060/704	1:1	0.147	0.08	24.61	25.30	1.172	0.172	22.1
Left tilted	10	QPSK 1RB_49	23060/704	1:1	0.091	0.02	24.61	25.30	1.172	0.107	22.1
Right cheek	10	QPSK 1RB_49	23060/704	1:1	0.184	0.01	24.61	25.30	1.172	0.216	22.1
Right tilted	10	QPSK 1RB_49	23060/704	1:1	0.095	-0.11	24.61	25.30	1.172	0.111	22.1
Right cheek	10	QPSK 1RB_25	23095/707.5	1:1	0.182	0.01	24.49	25.30	1.205	**0.219**	22.1
Right cheek	10	QPSK 1RB_25	23130/711	1:1	0.174	0.07	24.38	25.30	1.236	0.215	22.1
Head Test data(50%RB)											
Left cheek	10	QPSK 25RB_0	23095/707.5	1:1	0.125	-0.05	23.38	24.30	1.236	0.154	22.1
Left tilted	10	QPSK 25RB_0	23095/707.5	1:1	0.072	0.13	23.38	24.30	1.236	0.089	22.1
Right cheek	10	QPSK 25RB_0	23095/707.5	1:1	0.134	0.01	23.38	24.30	1.236	0.166	22.1
Right tilted	10	QPSK 25RB_0	23095/707.5	1:1	0.076	-0.04	23.38	24.30	1.236	0.094	22.1
Body Worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1RB_49	23060/704	1:1	0.239	0.13	24.61	25.30	1.172	0.280	22.1
Back side	10	QPSK 1RB_49	23060/704	1:1	0.306	-0.06	24.61	25.30	1.172	0.359	22.1
Back side	10	QPSK 1RB_25	23095/707.5	1:1	0.297	0.08	24.49	25.30	1.205	0.358	22.1
Back side	10	QPSK 1RB_25	23130/711	1:1	0.295	-0.01	24.38	25.30	1.236	**0.365**	22.1
Body Worn Test data(Separate 15mm 50%RB)											
Front side	10	QPSK 25RB_0	23095/707.5	1:1	0.196	0.12	23.38	24.30	1.236	0.242	22.1
Back side	10	QPSK 25RB_0	23095/707.5	1:1	0.247	0.06	23.38	24.30	1.236	0.305	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1RB_49	23060/704	1:1	0.205	-0.14	24.61	25.30	1.172	0.240	22.1
Back side	10	QPSK 1RB_49	23060/704	1:1	0.311	0.09	24.61	25.30	1.172	0.365	22.1
Left side	10	QPSK 1RB_49	23060/704	1:1	0.204	0.04	24.61	25.30	1.172	0.239	22.1
Right side	10	QPSK 1RB_49	23060/704	1:1	0.436	-0.06	24.61	25.30	1.172	0.511	22.1
Bottom side	10	QPSK 1RB_49	23060/704	1:1	0.192	-0.06	24.61	25.30	1.172	0.225	22.1
Right side	10	QPSK 1RB_25	23095/707.5	1:1	0.422	0.02	24.49	25.30	1.205	0.509	22.1
Right side	10	QPSK 1RB_25	23130/711	1:1	0.416	0.06	24.38	25.30	1.236	**0.514**	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	10	QPSK 25RB_0	23095/707.5	1:1	0.176	-0.09	23.38	24.30	1.236	0.218	22.1
Back side	10	QPSK 25RB_0	23095/707.5	1:1	0.262	0.11	23.38	24.30	1.236	0.324	22.1
Left side	10	QPSK 25RB_0	23095/707.5	1:1	0.170	0.13	23.38	24.30	1.236	0.210	22.1
Right side	10	QPSK 25RB_0	23095/707.5	1:1	0.298	-0.06	23.38	24.30	1.236	0.368	22.1
Bottom side	10	QPSK 25RB_0	23095/707.5	1:1	0.155	-0.14	23.38	24.30	1.236	0.192	22.1

Table 20：SAR of LTE Band 12 for Head and Body.

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB648474D04, 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.

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8.3.11SAR Result of LTE Band 13

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	10	QPSK 1RB_25	23230/782	1:1	0.141	0.03	23.64	24.80	1.306	0.184	22.1
Left tilted	10	QPSK 1RB_25	23230/782	1:1	0.096	0.01	23.64	24.80	1.306	0.125	22.1
Right cheek	10	QPSK 1RB_25	23230/782	1:1	0.162	0.09	23.64	24.80	1.306	**0.212**	22.1
Right tilted	10	QPSK 1RB_25	23230/782	1:1	0.109	0.06	23.64	24.80	1.306	0.142	22.1
Head Test data(50%RB)											
Left cheek	10	QPSK 25RB_0	23230/782	1:1	0.118	0.07	22.99	23.80	1.205	0.142	22.1
Left tilted	10	QPSK 25RB_0	23230/782	1:1	0.081	-0.09	22.99	23.80	1.205	0.098	22.1
Right cheek	10	QPSK 25RB_0	23230/782	1:1	0.140	0.02	22.99	23.80	1.205	0.169	22.1
Right tilted	10	QPSK 25RB_0	23230/782	1:1	0.090	0.01	22.99	23.80	1.205	0.108	22.1
Body Worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1RB_25	23230/782	1:1	0.180	0.05	23.64	24.80	1.306	0.235	22.1
Back side	10	QPSK 1RB_25	23230/782	1:1	0.230	0.07	23.64	24.80	1.306	**0.300**	22.1
Body Worn Test data(Separate 15mm 50%RB)											
Front side	10	QPSK 25RB_0	23230/782	1:1	0.147	-0.01	22.99	23.80	1.205	0.178	22.1
Back side	10	QPSK 25RB_0	23230/782	1:1	0.208	0.08	22.99	23.80	1.205	0.251	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1RB_25	23230/782	1:1	0.244	0.01	23.64	24.80	1.306	0.319	22.1
Back side	10	QPSK 1RB_25	23230/782	1:1	0.278	-0.07	23.64	24.80	1.306	**0.363**	22.1
Left side	10	QPSK 1RB_25	23230/782	1:1	0.132	-0.03	23.64	24.80	1.306	0.172	22.1
Right side	10	QPSK 1RB_25	23230/782	1:1	0.225	0.05	23.64	24.80	1.306	0.294	22.1
Bottom side	10	QPSK 1RB_25	23230/782	1:1	0.189	0.04	23.64	24.80	1.306	0.247	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	10	QPSK 25RB_0	23230/782	1:1	0.141	-0.07	22.99	23.80	1.205	0.170	22.1
Back side	10	QPSK 25RB_0	23230/782	1:1	0.218	0.05	22.99	23.80	1.205	0.263	22.1
Left side	10	QPSK 25RB_0	23230/782	1:1	0.117	0.08	22.99	23.80	1.205	0.141	22.1
Right side	10	QPSK 25RB_0	23230/782	1:1	0.191	-0.07	22.99	23.80	1.205	0.230	22.1
Bottom side	10	QPSK 25RB_0	23230/782	1:1	0.156	0.01	22.99	23.80	1.205	0.188	22.1

Table 21：SAR of LTE Band 13 for Head and Body.

Note:

1)The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2)Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB648474D04, 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.

8.3.12SAR Result of LTE Band 25

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_0	26140/1860	1:1	0.260	-0.03	23.78	24.80	1.265	0.329	22.3
Left tilted	20	QPSK 1RB_0	26140/1860	1:1	0.157	0.04	23.78	24.80	1.265	0.199	22.3
Right cheek	20	QPSK 1RB_0	26140/1860	1:1	0.204	-0.07	23.78	24.80	1.265	0.258	22.3
Right tilted	20	QPSK 1RB_0	26140/1860	1:1	0.181	0.09	23.78	24.80	1.265	0.229	22.3
Left cheek	20	QPSK 1RB_0	26365/1882.5	1:1	0.267	0.01	23.62	24.80	1.312	0.350	22.3
Left cheek	20	QPSK 1RB_0	26590/1905	1:1	0.283	0.06	23.38	24.80	1.387	**0.392**	22.3
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_0	26140/1860	1:1	0.154	0.06	22.90	23.80	1.230	0.189	22.3
Left tilted	20	QPSK 50RB_0	26140/1860	1:1	0.122	-0.01	22.90	23.80	1.230	0.150	22.3
Right cheek	20	QPSK 50RB_0	26140/1860	1:1	0.135	0.02	22.90	23.80	1.230	0.166	22.3
Right tilted	20	QPSK 50RB_0	26140/1860	1:1	0.150	0.04	22.90	23.80	1.230	0.185	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_0	26140/1860	1:1	0.279	0.07	23.78	24.80	1.265	0.353	22.3
Back side	20	QPSK 1RB_0	26140/1860	1:1	0.379	-0.01	23.78	24.80	1.265	0.479	22.3
Back side	20	QPSK 1RB_0	26365/1882.5	1:1	0.422	-0.03	23.62	24.80	1.312	0.554	22.3
Back side	20	QPSK 1RB_0	26590/1905	1:1	0.460	-0.03	23.38	24.80	1.387	**0.638**	22.3
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_0	26140/1860	1:1	0.215	0.02	22.90	23.80	1.230	0.265	22.3
Back side	20	QPSK 50RB_0	26140/1860	1:1	0.339	-0.01	22.90	23.80	1.230	0.417	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	26140/1860	1:1	0.549	0.09	23.78	24.80	1.265	0.694	22.3
Back side	20	QPSK 1RB_0	26140/1860	1:1	0.772	-0.14	23.78	24.80	1.265	0.976	22.3
Left side	20	QPSK 1RB_0	26140/1860	1:1	0.489	0.01	23.78	24.80	1.265	0.618	22.3
Right side	20	QPSK 1RB_0	26140/1860	1:1	0.175	-0.08	23.78	24.80	1.265	0.221	22.3
Bottom side	20	QPSK 1RB_0	26140/1860	1:1	0.775	0.04	23.78	24.80	1.265	0.980	22.3
Bottom side	20	QPSK 1RB_0	26365/1882.5	1:1	0.718	0.02	23.62	24.80	1.312	0.942	22.3
Bottom side	20	QPSK 1RB_0	26590/1905	1:1	0.730	0.03	23.38	24.80	1.387	1.012	22.3
Back side	20	QPSK 1RB_0	26365/1882.5	1:1	0.745	-0.18	23.62	24.80	1.312	0.978	22.3
Back side	20	QPSK 1RB_0	26590/1905	1:1	0.748	-0.01	23.38	24.80	1.387	**1.037**	22.3
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	26140/1860	1:1	0.417	0.03	22.90	23.80	1.230	0.513	22.3
Back side	20	QPSK 50RB_0	26140/1860	1:1	0.761	-0.02	22.90	23.80	1.230	0.936	22.3
Left side	20	QPSK 50RB_0	26140/1860	1:1	0.378	0.05	22.90	23.80	1.230	0.465	22.3
Right side	20	QPSK 50RB_0	26140/1860	1:1	0.128	-0.09	22.90	23.80	1.230	0.157	22.3
Bottom side	20	QPSK 50RB_0	26140/1860	1:1	0.620	0.03	22.90	23.80	1.230	0.763	22.3
Back side	20	QPSK 50RB_0	26365/1882.5	1:1	0.737	0.01	22.60	23.80	1.318	0.972	22.3
Back side	20	QPSK 50RB_0	26590/1905	1:1	0.709	0.06	22.34	23.80	1.400	0.992	22.3
Hotspot Test data (Separate 10mm 100%RB)											
Back side	20	QPSK 100RB_0	26140/1860	1:1	0.755	0.02	22.89	23.80	1.233	0.931	22.3
Bottom side	20	QPSK 100RB_0	26140/1860	1:1	0.598	-0.01	22.89	23.80	1.233	0.737	22.3

Table 22：SAR of LTE Band 25 for Head and Body.

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB648474D04, 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.

8.3.13 SAR Result of LTE Band 26

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	15	QPSK 1RB_74	26765/821.5	1:1	0.199	0.04	24.56	25.30	1.186	0.236	22.1
Left tilted	15	QPSK 1RB_74	26765/821.5	1:1	0.123	0.06	24.56	25.30	1.186	0.146	22.1
Right cheek	15	QPSK 1RB_74	26765/821.5	1:1	0.207	0.02	24.56	25.30	1.186	0.245	22.1
Right tilted	15	QPSK 1RB_74	26765/821.5	1:1	0.143	-0.07	24.56	25.30	1.186	0.170	22.1
Right cheek	15	QPSK 1RB_74	26865/831.5	1:1	0.223	0.06	24.12	25.30	1.312	0.293	22.1
Right cheek	15	QPSK 1RB_38	26965/841.5	1:1	0.209	0.05	23.78	25.30	1.419	**0.297**	22.1
Head Test data(50%RB)											
Left cheek	15	QPSK 36RB_0	26765/821.5	1:1	0.143	0.01	23.27	24.30	1.268	0.181	22.1
Left tilted	15	QPSK 36RB_0	26765/821.5	1:1	0.087	-0.03	23.27	24.30	1.268	0.110	22.1
Right cheek	15	QPSK 36RB_0	26765/821.5	1:1	0.149	0.04	23.27	24.30	1.268	0.189	22.1
Right tilted	15	QPSK 36RB_0	26765/821.5	1:1	0.093	0.06	23.27	24.30	1.268	0.118	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	15	QPSK 1RB_74	26765/821.5	1:1	0.134	0.04	24.56	25.30	1.186	0.159	22.1
Back side	15	QPSK 1RB_74	26765/821.5	1:1	0.234	-0.03	24.56	25.30	1.186	0.277	22.1
Back side	15	QPSK 1RB_74	26865/831.5	1:1	0.212	-0.15	24.12	25.30	1.312	0.278	22.1
Back side	15	QPSK 1RB_38	26965/841.5	1:1	0.206	0.09	23.78	25.30	1.419	**0.292**	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side	15	QPSK 36RB_0	26765/821.5	1:1	0.088	0.02	23.27	24.30	1.268	0.112	22.1
Back side	15	QPSK 36RB_0	26765/821.5	1:1	0.127	0.07	23.27	24.30	1.268	0.161	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	15	QPSK 1RB_74	26765/821.5	1:1	0.149	0.01	24.56	25.30	1.186	0.177	22.1
Back side	15	QPSK 1RB_74	26765/821.5	1:1	0.420	-0.09	24.56	25.30	1.186	0.498	22.1
Left side	15	QPSK 1RB_74	26765/821.5	1:1	0.100	0.05	24.56	25.30	1.186	0.119	22.1
Right side	15	QPSK 1RB_74	26765/821.5	1:1	0.162	-0.08	24.56	25.30	1.186	0.192	22.1
Bottom side	15	QPSK 1RB_74	26765/821.5	1:1	0.174	0.01	24.56	25.30	1.186	0.206	22.1
Back side	15	QPSK 1RB_74	26865/831.5	1:1	0.483	-0.01	24.12	25.30	1.312	0.634	22.1
Back side	15	QPSK 1RB_38	26965/841.5	1:1	0.466	-0.07	23.78	25.30	1.419	**0.661**	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	15	QPSK 36RB_0	26765/821.5	1:1	0.093	0.02	23.27	24.30	1.268	0.118	22.1
Back side	15	QPSK 36RB_0	26765/821.5	1:1	0.170	0.01	23.27	24.30	1.268	0.216	22.1
Left side	15	QPSK 36RB_0	26765/821.5	1:1	0.067	-0.09	23.27	24.30	1.268	0.085	22.1
Right side	15	QPSK 36RB_0	26765/821.5	1:1	0.106	0.07	23.27	24.30	1.268	0.134	22.1
Bottom side	15	QPSK 36RB_0	26765/821.5	1:1	0.106	0.04	23.27	24.30	1.268	0.134	22.1

Table 23：SAR of LTE Band 26 for Head and Body.

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB648474D04, 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.

8.3.14 SAR Result of LTE Band 38

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_0	38150/2610	1:1.58	0.151	0.06	23.38	24.80	1.387	**0.209**	22.1
Left tilted	20	QPSK 1RB_0	38150/2610	1:1.58	0.074	0.01	23.38	24.80	1.387	0.102	22.1
Right cheek	20	QPSK 1RB_0	38150/2610	1:1.58	0.101	0.01	23.38	24.80	1.387	0.140	22.1
Right tilted	20	QPSK 1RB_0	38150/2610	1:1.58	0.060	0.06	23.38	24.80	1.387	0.083	22.1
Left cheek	20	QPSK 1RB_0	37850/2580	1:1.58	0.117	-0.03	23.22	24.80	1.439	0.168	22.1
Left cheek	20	QPSK 1RB_99	38000/2595	1:1.58	0.138	0.01	23.29	24.80	1.416	0.195	22.1
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_0	38150/2610	1:1.58	0.105	-0.05	22.39	23.80	1.384	0.145	22.1
Left tilted	20	QPSK 50RB_0	38150/2610	1:1.58	0.101	0.04	22.39	23.80	1.384	0.140	22.1
Right cheek	20	QPSK 50RB_0	38150/2610	1:1.58	0.080	0.03	22.39	23.80	1.384	0.111	22.1
Right tilted	20	QPSK 50RB_0	38150/2610	1:1.58	0.054	-0.01	22.39	23.80	1.384	0.075	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_0	38150/2610	1:1.58	0.274	0.01	23.38	24.80	1.387	**0.380**	22.1
Back side	20	QPSK 1RB_0	38150/2610	1:1.58	0.151	0.01	23.38	24.80	1.387	0.209	22.1
Front side	20	QPSK 1RB_0	37850/2580	1:1.58	0.214	-0.01	23.22	24.80	1.439	0.308	22.1
Front side	20	QPSK 1RB_99	38000/2595	1:1.58	0.253	0.05	23.29	24.80	1.416	0.358	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_0	38150/2610	1:1.58	0.176	-0.03	22.39	23.80	1.384	0.244	22.1
Back side	20	QPSK 50RB_0	38150/2610	1:1.58	0.118	0.05	22.39	23.80	1.384	0.163	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	38150/2610	1:1.58	0.485	0.04	23.38	24.80	1.387	**0.673**	22.1
Back side	20	QPSK 1RB_0	38150/2610	1:1.58	0.401	0.05	23.38	24.80	1.387	0.556	22.1
Left side	20	QPSK 1RB_0	38150/2610	1:1.58	0.137	0.02	23.38	24.80	1.387	0.190	22.1
Right side	20	QPSK 1RB_0	38150/2610	1:1.58	0.092	0.03	23.38	24.80	1.387	0.128	22.1
Bottom side	20	QPSK 1RB_0	38150/2610	1:1.58	0.380	-0.07	23.38	24.80	1.387	0.527	22.1
Front side	20	QPSK 1RB_0	37850/2580	1:1.58	0.408	-0.08	23.22	24.80	1.439	0.587	22.1
Front side	20	QPSK 1RB_99	38000/2595	1:1.58	0.463	0.05	23.29	24.80	1.416	0.656	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	38150/2610	1:1.58	0.372	0.03	22.39	23.80	1.384	0.515	22.1
Back side	20	QPSK 50RB_0	38150/2610	1:1.58	0.323	0.06	22.39	23.80	1.384	0.447	22.1
Left side	20	QPSK 50RB_0	38150/2610	1:1.58	0.101	0.01	22.39	23.80	1.384	0.140	22.1
Right side	20	QPSK 50RB_0	38150/2610	1:1.58	0.072	-0.05	22.39	23.80	1.384	0.100	22.1
Bottom side	20	QPSK 50RB_0	38150/2610	1:1.58	0.333	0.01	22.39	23.80	1.384	0.461	22.1

Table 24：SAR of LTE Band 38 for Head and Body.

Note:

1)The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2)Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB648474D04, 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.

8.3.15 SAR Result of LTE Band 41

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek-Class 3	20	QPSK 1RB_0	40620/2593	1:1.58	0.111	0.05	23.66	24.80	1.300	0.144	22.1
Left tilted -Class 3	20	QPSK 1RB_0	40620/2593	1:1.58	0.110	0.01	23.66	24.80	1.300	0.143	22.1
Right cheek-Class 3	20	QPSK 1RB_0	40620/2593	1:1.58	0.093	-0.02	23.66	24.80	1.300	0.121	22.1
Right tilted -Class 3	20	QPSK 1RB_0	40620/2593	1:1.58	0.059	0.06	23.66	24.80	1.300	0.077	22.1
Left cheek-Class 3	20	QPSK 1RB_0	39750/2506	1:1.58	0.057	-0.08	23.66	24.80	1.300	0.074	22.1
Left cheek-Class 3	20	QPSK 1RB_99	40185/2549.5	1:1.58	0.098	0.04	23.27	24.80	1.422	0.139	22.1
Left cheek-Class 3	20	QPSK 1RB_50	41055/2636.5	1:1.58	0.133	0.05	23.53	24.80	1.340	**0.178**	22.1
Left cheek-Class2	20	QPSK 1RB_50	41055/2636.5	1:2.31	0.129	0.02	26.13	26.80	1.167	0.151	22.1
Left cheek-Class 3	20	QPSK 1RB_50	41490/2680	1:1.58	0.113	0.02	23.39	24.80	1.384	0.156	22.1
Head Test data(50%RB)											
Left cheek-Class 3	20	QPSK 50RB_0	40620/2593	1:1.58	0.105	0.08	22.70	23.80	1.288	0.135	22.1
Left tilted-Class 3	20	QPSK 50RB_0	40620/2593	1:1.58	0.093	-0.06	22.70	23.80	1.288	0.120	22.1
Right cheek-Class 3	20	QPSK 50RB_0	40620/2593	1:1.58	0.077	0.03	22.70	23.80	1.288	0.099	22.1
Right tilted-Class 3	20	QPSK 50RB_0	40620/2593	1:1.58	0.054	0.01	22.70	23.80	1.288	0.070	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side-Class 3	20	QPSK 1RB_0	40620/2593	1:1.58	0.239	-0.02	23.66	24.80	1.300	**0.311**	22.1
Front side-Class2	20	QPSK 1RB_0	40620/2593	1:2.31	0.215	0.01	26.12	26.80	1.169	0.251	22.1
Back side-Class 3	20	QPSK 1RB_0	40620/2593	1:1.58	0.179	0.06	23.66	24.80	1.300	0.233	22.1
Front side-Class 3	20	QPSK 1RB_0	39750/2506	1:1.58	0.123	0.05	23.66	24.80	1.300	0.160	22.1
Front side-Class 3	20	QPSK 1RB_99	40185/2549.5	1:1.58	0.189	0.01	23.27	24.80	1.422	0.269	22.1
Front side-Class 3	20	QPSK 1RB_50	41055/2636.5	1:1.58	0.206	0.04	23.53	24.80	1.340	0.276	22.1
Front side-Class 3	20	QPSK 1RB_50	41490/2680	1:1.58	0.176	-0.07	23.39	24.80	1.384	0.244	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side-Class 3	20	QPSK 50RB_0	40620/2593	1:1.58	0.168	-0.03	22.70	23.80	1.288	0.216	22.1
Back side-Class 3	20	QPSK 50RB_0	40620/2593	1:1.58	0.143	0.05	22.70	23.80	1.288	0.184	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side-Class 3	20	QPSK 1RB_0	40620/2593	1:1.58	0.540	0.06	23.66	24.80	1.300	**0.702**	22.1
Front side-Class2	20	QPSK 1RB_0	40620/2593	1:2.31	0.431	0.08	26.12	26.80	1.169	0.504	22.1
Back side-Class 3	20	QPSK 1RB_0	40620/2593	1:1.58	0.386	0.02	23.66	24.80	1.300	0.502	22.1
Left side-Class 3	20	QPSK 1RB_0	40620/2593	1:1.58	0.123	0.05	23.66	24.80	1.300	0.160	22.1
Right side-Class 3	20	QPSK 1RB_0	40620/2593	1:1.58	0.082	0.03	23.66	24.80	1.300	0.107	22.1
Bottom side-Class 3	20	QPSK 1RB_0	40620/2593	1:1.58	0.375	0.01	23.66	24.80	1.300	0.488	22.1
Front side-Class 3	20	QPSK 1RB_0	39750/2506	1:1.58	0.216	0.05	23.66	24.80	1.300	0.281	22.1
Front side-Class 3	20	QPSK 1RB_99	40185/2549.5	1:1.58	0.340	-0.01	23.27	24.80	1.422	0.484	22.1
Front side-Class 3	20	QPSK 1RB_50	41055/2636.5	1:1.58	0.414	-0.09	23.53	24.80	1.340	0.555	22.1
Front side-Class 3	20	QPSK 1RB_50	41490/2680	1:1.58	0.400	-0.05	23.39	24.80	1.384	0.553	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side-Class 3	20	QPSK 50RB_0	40620/2593	1:1.58	0.362	-0.03	22.70	23.80	1.288	0.466	22.1
Back side-Class 3	20	QPSK 50RB_0	40620/2593	1:1.58	0.300	0.08	22.70	23.80	1.288	0.386	22.1
Left side-Class 3	20	QPSK 50RB_0	40620/2593	1:1.58	0.087	0.04	22.70	23.80	1.288	0.112	22.1
Right side-Class 3	20	QPSK 50RB_0	40620/2593	1:1.58	0.066	0.01	22.70	23.80	1.288	0.085	22.1
Bottom side-Class 3	20	QPSK 50RB_0	40620/2593	1:1.58	0.318	0.06	22.70	23.80	1.288	0.410	22.1
Hotspot Test data (Separate 10mm 100%RB)											
Front side-Class 3	20	QPSK 100RB_0	40620/2593	1:1.58	0.344	0.02	22.59	23.80	1.321	0.455	22.1

Table 25：SAR of LTE Band 41 for Head and Body.

Note:

1)The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2)Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3)Per KDB648474D04, 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

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8.3.16 SAR Result of LTE Band 66

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_99	132572/1770	1:1	0.143	0.01	24.43	24.80	1.089	0.156	22.2
Left tilted	20	QPSK 1RB_99	132572/1770	1:1	0.089	0.03	24.43	24.80	1.089	0.097	22.2
Right cheek	20	QPSK 1RB_99	132572/1770	1:1	0.182	-0.07	24.43	24.80	1.089	0.198	22.2
Right tilted	20	QPSK 1RB_99	132572/1770	1:1	0.106	-0.03	24.43	24.80	1.089	0.115	22.2
Right cheek	20	QPSK 1RB_99	132322/1745	1:1	0.165	-0.02	24.09	24.80	1.178	0.194	22.2
Right cheek	20	QPSK 1RB_99	132072/1720	1:1	0.191	-0.06	24.00	24.80	1.202	**0.230**	22.2
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_50	132572/1770	1:1	0.123	0.02	22.87	23.80	1.239	0.152	22.2
Left tilted	20	QPSK 50RB_50	132572/1770	1:1	0.075	0.03	22.87	23.80	1.239	0.093	22.2
Right cheek	20	QPSK 50RB_50	132572/1770	1:1	0.124	-0.02	22.87	23.80	1.239	0.154	22.2
Right tilted	20	QPSK 50RB_50	132572/1770	1:1	0.093	-0.03	22.87	23.80	1.239	0.115	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_99	132572/1770	1:1	0.270	-0.04	24.43	24.80	1.089	0.294	22.2
Back side	20	QPSK 1RB_99	132572/1770	1:1	0.278	-0.05	24.43	24.80	1.089	0.303	22.2
Back side	20	QPSK 1RB_99	132322/1745	1:1	0.300	-0.07	24.09	24.80	1.178	0.353	22.2
Back side	20	QPSK 1RB_99	132072/1720	1:1	0.304	-0.07	24.00	24.80	1.202	**0.365**	22.2
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_50	132572/1770	1:1	0.222	0.01	22.87	23.80	1.239	0.275	22.2
Back side	20	QPSK 50RB_50	132572/1770	1:1	0.195	0.00	22.87	23.80	1.239	0.242	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_99	132572/1770	1:1	0.417	0.01	24.43	24.80	1.089	0.454	22.2
Back side	20	QPSK 1RB_99	132572/1770	1:1	0.663	-0.08	24.43	24.80	1.089	0.722	22.2
Left side	20	QPSK 1RB_99	132572/1770	1:1	0.322	0.04	24.43	24.80	1.089	0.351	22.2
Right side	20	QPSK 1RB_99	132572/1770	1:1	0.116	0.02	24.43	24.80	1.089	0.126	22.2
Bottom side	20	QPSK 1RB_99	132572/1770	1:1	0.589	0.04	24.43	24.80	1.089	0.641	22.2
Back side	20	QPSK 1RB_99	132322/1745	1:1	0.620	-0.05	24.09	24.80	1.178	**0.730**	22.2
Back side	20	QPSK 1RB_99	132072/1720	1:1	0.602	0.06	24.00	24.80	1.202	0.724	22.2
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_50	132572/1770	1:1	0.340	0.02	22.87	23.80	1.239	0.421	22.2
Back side	20	QPSK 50RB_50	132572/1770	1:1	0.542	0.04	22.87	23.80	1.239	0.671	22.2
Left side	20	QPSK 50RB_50	132572/1770	1:1	0.254	0.02	22.87	23.80	1.239	0.315	22.2
Right side	20	QPSK 50RB_50	132572/1770	1:1	0.096	0.02	22.87	23.80	1.239	0.119	22.2
Bottom side	20	QPSK 50RB_50	132572/1770	1:1	0.493	0.03	22.87	23.80	1.239	0.611	22.2

Table 26：SAR of LTE Band 66 for Head and Body.

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB648474D04, 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.

8.3.17SAR Result of LTE Band 71

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_50	133322/683	1:1	0.174	-0.12	24.76	25.30	1.132	0.197	22.1
Left tilted	20	QPSK 1RB_50	133322/683	1:1	0.098	-0.02	24.76	25.30	1.132	0.111	22.1
Right cheek	20	QPSK 1RB_50	133322/683	1:1	0.228	-0.05	24.76	25.30	1.132	**0.258**	22.1
Right tilted	20	QPSK 1RB_50	133322/683	1:1	0.100	0.03	24.76	25.30	1.132	0.113	22.1
Right cheek	20	QPSK 1RB_50	133222/673	1:1	0.199	0.02	24.76	25.30	1.132	0.225	22.1
Right cheek	20	QPSK 1RB_50	133372/688	1:1	0.197	0.02	24.57	25.30	1.183	0.233	22.1
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_25	133322/683	1:1	0.138	-0.04	23.78	24.30	1.127	0.156	22.1
Left tilted	20	QPSK 50RB_25	133322/683	1:1	0.080	0.02	23.78	24.30	1.127	0.090	22.1
Right cheek	20	QPSK 50RB_25	133322/683	1:1	0.187	0.01	23.78	24.30	1.127	0.211	22.1
Right tilted	20	QPSK 50RB_25	133322/683	1:1	0.081	0.03	23.78	24.30	1.127	0.091	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_50	133322/683	1:1	0.220	0.01	24.76	25.30	1.132	0.249	22.1
Back side	20	QPSK 1RB_50	133322/683	1:1	0.292	0.15	24.76	25.30	1.132	**0.331**	22.1
Back side	20	QPSK 1RB_50	133222/673	1:1	0.273	-0.09	24.76	25.30	1.132	0.309	22.1
Back side	20	QPSK 1RB_50	133372/688	1:1	0.270	0.08	24.57	25.30	1.183	0.319	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_25	133322/683	1:1	0.221	-0.03	23.78	24.30	1.127	0.249	22.1
Back side	20	QPSK 50RB_25	133322/683	1:1	0.238	-0.06	23.78	24.30	1.127	0.268	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_50	133322/683	1:1	0.180	0.02	24.76	25.30	1.132	0.204	22.1
Back side	20	QPSK 1RB_50	133322/683	1:1	0.281	0.04	24.76	25.30	1.132	0.318	22.1
Left side	20	QPSK 1RB_50	133322/683	1:1	0.237	0.03	24.76	25.30	1.132	0.268	22.1
Right side	20	QPSK 1RB_50	133322/683	1:1	0.428	-0.09	24.76	25.30	1.132	**0.485**	22.1
Bottom side	20	QPSK 1RB_50	133322/683	1:1	0.240	-0.04	24.76	25.30	1.132	0.272	22.1
Right side	20	QPSK 1RB_50	133222/673	1:1	0.409	0.03	24.76	25.30	1.132	0.463	22.1
Right side	20	QPSK 1RB_50	133372/688	1:1	0.400	0.01	24.57	25.30	1.183	0.473	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_25	133322/683	1:1	0.177	0.03	23.78	24.30	1.127	0.200	22.1
Back side	20	QPSK 50RB_25	133322/683	1:1	0.276	0.04	23.78	24.30	1.127	0.311	22.1
Left side	20	QPSK 50RB_25	133322/683	1:1	0.194	0.03	23.78	24.30	1.127	0.219	22.1
Right side	20	QPSK 50RB_25	133322/683	1:1	0.351	0.00	23.78	24.30	1.127	0.396	22.1
Bottom side	20	QPSK 50RB_25	133322/683	1:1	0.189	0.06	23.78	24.30	1.127	0.213	22.1

Table 27：SAR of LTE Band 71 for Head and Body.

Note:

3) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

4) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB648474D04, 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.

8.3.18SAR Result of WiFi 2.4G

Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg)1-g	Power drift(dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data											
Left cheek	802.11b	11/2462	98.81%	1.012	0.730	-0.03	16.89	17.00	1.026	0.758	22.0
Left tilted	802.11b	11/2462	98.81%	1.012	0.631	-0.09	16.89	17.00	1.026	0.655	22.0
Right cheek	802.11b	11/2462	98.81%	1.012	0.312	0.12	16.89	17.00	1.026	0.324	22.0
Right tilted	802.11b	11/2462	98.81%	1.012	0.333	0.03	16.89	17.00	1.026	0.346	22.0
Left cheek	802.11b	1/2412	98.81%	1.012	0.811	0.08	16.66	17.00	1.081	**0.888**	22.0
Left cheek-Repeat	802.11b	1/2412	98.81%	1.012	0.797	0.06	16.66	17.00	1.081	0.872	22.0
Left cheek	802.11b	6/2437	98.81%	1.012	0.783	0.01	16.54	17.00	1.112	0.881	22.0
Body worn Test data (Separate 15mm)											
Front side	802.11b	1/2412	98.81%	1.012	0.106	-0.06	17.91	18.00	1.021	0.110	22.0
Back side	802.11b	1/2412	98.81%	1.012	0.160	0.02	17.91	18.00	1.021	**0.165**	22.0
Back side	802.11b	6/2437	98.81%	1.012	0.134	-0.08	17.84	18.00	1.038	0.141	22.0
Back side	802.11b	11/2462	98.81%	1.012	0.131	-0.06	17.80	18.00	1.047	0.139	22.0
Hotspot Test data (Separate 10mm)											
Front side	802.11b	1/2412	98.81%	1.012	0.186	0.10	17.91	18.00	1.021	0.192	22.0
Back side	802.11b	1/2412	98.81%	1.012	0.438	-0.04	17.91	18.00	1.021	**0.453**	22.0
Right side	802.11b	1/2412	98.81%	1.012	0.170	0.02	17.91	18.00	1.021	0.176	22.0
Top side	802.11b	1/2412	98.81%	1.012	0.280	0.07	17.91	18.00	1.021	0.289	22.0
Back side	802.11b	6/2437	98.81%	1.012	0.321	-0.07	17.84	18.00	1.038	0.337	22.0
Back side	802.11b	11/2462	98.81%	1.012	0.359	-0.01	17.80	18.00	1.047	0.380	22.0
Additional Test data(simultaneous transmission with (WWAN+WiFi 2.4G)											
Test position	**Test mode**	**Test Ch./Freq.**	**Duty Cycle**	**Duty Cycle Scaled factor**	**SAR (W/kg)1-g**	**Power drift(dB)**	**Conducted power (dBm)**	**Tune up Limit (dBm)**	**Scaled factor**	**Scaled SAR(W/kg)**	**Liquid Temp.**
Hotspot Test data (Separate 10mm)											
Back side	802.11b	1/2412	98.81%	1.012	0.160	0.01	14.88	15.00	1.028	0.166	22.0

Table 28：SAR of WiFi 2.4G for Head and Body.

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) When the highest reported SAR for the initial test configuration 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 test for the other 802.11 modes are not required.

Test Position	Channel/ Frequency (MHz)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	3rd Repeated SAR (1g)
Left cheek	1/2412	0.811	0.797	1.018	N/A	N/A
Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.						
2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).						
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.						
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg						

8.3.19 SAR Result of WIFI 5G

Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg)1-g	Power drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data of U-NII-2A											
Left cheek	802.11a	60/5300	98.90%	1.011	0.526	0.06	12.02	13.00	1.253	**0.666**	22.2
Left tilted	802.11a	60/5300	98.90%	1.011	0.380	0.02	12.02	13.00	1.253	0.481	22.2
Right cheek	802.11a	60/5300	98.90%	1.011	0.164	0.01	12.02	13.00	1.253	0.208	22.2
Right tilted	802.11a	60/5300	98.90%	1.011	0.157	0.03	12.02	13.00	1.253	0.199	22.2
Left cheek	802.11a	52/5260	98.90%	1.011	0.424	-0.07	11.95	13.00	1.274	0.546	22.2
Left cheek	802.11a	64/5320	98.90%	1.011	0.383	-0.08	11.91	13.00	1.285	0.498	22.2
Head Test data of U-NII-2C											
Left cheek	802.11a	136/5680	98.90%	1.011	0.291	-0.01	12.20	13.00	1.202	0.354	22.2
Left tilted	802.11a	136/5680	98.90%	1.011	0.078	0.06	12.20	13.00	1.202	0.094	22.2
Right cheek	802.11a	136/5680	98.90%	1.011	0.104	0.02	12.20	13.00	1.202	0.126	22.2
Right tilted	802.11a	136/5680	98.90%	1.011	0.079	0.04	12.20	13.00	1.202	0.096	22.2
Head Test data of U-NII-3											
Left cheek	802.11a	157/5785	98.90%	1.011	0.298	0.01	12.19	13.00	1.205	0.363	22.2
Left tilted	802.11a	157/5785	98.90%	1.011	0.126	0.03	12.19	13.00	1.205	0.154	22.2
Right cheek	802.11a	157/5785	98.90%	1.011	0.090	0.03	12.19	13.00	1.205	0.109	22.2
Right tilted	802.11a	157/5785	98.90%	1.011	0.131	0.03	12.19	13.00	1.205	0.160	22.2
Body worn Test data of U-NII-2A (Separate 15mm)											
Front side	802.11a	52/5260	98.90%	1.011	0.089	0.08	14.00	15.00	1.259	0.113	22.2
Back side	802.11a	52/5260	98.90%	1.011	0.328	-0.09	14.00	15.00	1.259	0.418	22.2
Back side	802.11a	60/5300	98.90%	1.011	0.433	-0.04	13.97	15.00	1.268	**0.555**	22.2
Back side	802.11a	64/5320	98.90%	1.011	0.374	0.03	13.99	15.00	1.262	0.477	22.2
Body worn Test data of U-NII-2C(Separate 15mm)											
Front side	802.11a	128/5640	98.90%	1.011	0.042	0.01	14.10	15.00	1.230	0.052	22.2
Back side	802.11a	128/5640	98.90%	1.011	0.052	0.02	14.10	15.00	1.230	0.064	22.2
Body worn Test data of U-NII-3(Separate 15mm)											
Front side	802.11a	161/5805	98.90%	1.011	0.042	0.08	13.11	14.00	1.227	0.052	22.2
Back side	802.11a	161/5805	98.90%	1.011	0.109	0.06	13.11	14.00	1.227	0.135	22.2
Hotspot Test data of U-NII-1 (Separate 10mm)											
Front side	802.11a	40/5200	98.90%	1.011	0.148	0.06	14.20	15.00	1.202	0.180	22.2
Back side	802.11a	40/5200	98.90%	1.011	0.626	-0.02	14.20	15.00	1.202	0.761	22.2
Right side	802.11a	40/5200	98.90%	1.011	0.418	-0.09	14.20	15.00	1.202	0.508	22.2
Top side	802.11a	40/5200	98.90%	1.011	0.182	0.03	14.20	15.00	1.202	0.221	22.2
Back side	802.11a	36/5180	98.90%	1.011	0.537	0.07	14.08	15.00	1.236	0.671	22.2
Back side	802.11a	48/5240	98.90%	1.011	0.595	0.06	13.97	15.00	1.268	**0.763**	22.2
Hotspot Test data of U-NII-3 (Separate 10mm)											
Front side	802.11a	161/5805	98.90%	1.011	0.032	-0.03	13.11	15.00	1.545	0.051	22.2
Back side	802.11a	161/5805	98.90%	1.011	0.094	-0.02	13.11	15.00	1.545	0.147	22.2
Right side	802.11a	161/5805	98.90%	1.011	0.252	-0.03	13.11	15.00	1.545	0.394	22.2
Top side	802.11a	161/5805	98.90%	1.011	0.110	0.05	13.11	15.00	1.545	0.172	22.2

Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg)10-g	Power drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Product specific 10g SAR Test data of U-NII-2A(Separate 0mm)											
Front side	802.11a	52/5260	98.90%	1.011	0.183	-0.03	14.00	15.00	1.259	0.233	22.2
Back side	802.11a	52/5260	98.90%	1.011	0.409	-0.04	14.00	15.00	1.259	0.521	22.2
Right side	802.11a	52/5260	98.90%	1.011	0.686	-0.01	14.00	15.00	1.259	0.873	22.2
Top side	802.11a	52/5260	98.90%	1.011	0.117	-0.06	14.00	15.00	1.259	0.149	22.2
Right side	802.11a	64/5320	98.90%	1.011	0.772	-0.01	13.99	15.00	1.262	**0.985**	22.2
Right side	802.11a	60/5300	98.90%	1.011	0.540	-0.07	13.97	15.00	1.268	0.692	22.2
Product specific 10g SAR Test data of U-NII-2C(Separate 0mm)											
Front side	802.11a	128/5640	98.90%	1.011	0.079	-0.03	14.10	15.00	1.230	0.099	22.2
Back side	802.11a	128/5640	98.90%	1.011	0.249	-0.04	14.10	15.00	1.230	0.310	22.2
Right side	802.11a	128/5640	98.90%	1.011	0.406	-0.07	14.10	15.00	1.230	0.505	22.2
Top side	802.11a	128/5640	98.90%	1.011	0.102	-0.03	14.10	15.00	1.230	0.127	22.2
Additional Test data(simultaneous transmission with (WWAN+WiFi 5G)											
Test position	**Test mode**	**Test Ch./Freq.**	**Duty Cycle**	**Duty Cycle Scaled factor**	**SAR (W/kg)1-g**	**Power drift(dB)**	**Conducted power(dBm)**	**Tune up Limit(dBm)**	**Scaled factor**	**Scaled SAR(W/kg)**	**Liquid Temp.**
Hotspot Test data (Separate 10mm)											
Back side	802.11a	36/5180	98.90%	1.011	0.273	-0.01	12.12	13.00	1.225	0.338	22.2

Table 29：SAR of WIFI 5G for Head, Body and Product specific 10g SAR.

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).
3) Each channel was tested at the lowest data rate.
4) 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. As 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.
5) For Wi-Fi 5G, U-NII-2A (5250-5350 MHz) and U-NII-2C (5470-5725 MHz) bands does not support hotspot function.
6) When the highest reported SAR for the initial test configuration 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 test for the other 802.11 modes are not required.

8.3.20 SAR Result of BT

Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data											
Left cheek	DH5	78/2480	76.89%	1.301	0.184	-0.01	12.20	13.00	1.202	0.288	21.8
Left tilted	DH5	78/2480	76.89%	1.301	0.146	0.03	12.20	13.00	1.202	0.228	21.8
Right cheek	DH5	78/2480	76.89%	1.301	0.076	0.02	12.20	13.00	1.202	0.119	21.8
Right tilted	DH5	78/2480	76.89%	1.301	0.081	0.03	12.20	13.00	1.202	0.127	21.8
Left cheek	DH5	0/2402	76.89%	1.301	0.172	-0.01	11.44	13.00	1.432	**0.320**	21.8
Left cheek	DH5	39/2441	76.89%	1.301	0.178	-0.01	11.61	13.00	1.377	0.319	21.8
Hotspot Test Data (10mm)											
Front side	DH5	78/2480	76.89%	1.301	0.032	0.03	12.20	13.00	1.202	0.050	21.8
Back side	DH5	78/2480	76.89%	1.301	0.046	0.05	12.20	13.00	1.202	0.072	21.8
Right side	DH5	78/2480	76.89%	1.301	0.030	0.01	12.20	13.00	1.202	0.047	21.8
Top side	DH5	78/2480	76.89%	1.301	0.034	0.03	12.20	13.00	1.202	0.053	21.8
Back side	DH5	0/2402	76.89%	1.301	0.043	0.06	11.44	13.00	1.432	0.080	21.8
Back side	DH5	39/2441	76.89%	1.301	0.045	0.07	11.61	13.00	1.377	**0.080**	21.8

Table 30：SAR of BT for Head and Body.

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB648474D04, 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.

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8.4 Multiple Transmitter Evaluation

8.4.1 Simultaneous SAR SAR test evaluation

- **Simultaneous Transmission Possibilities**

NO	Simultaneous TX Combination	Head	Body-worn	Hotspot	Product Specific 10-g (0mm)
1	WWAN+BT	Y	Y	Y	Y
2	WWAN+WIFI 2.4G	Y	Y	Y	Y
3	WWAN+WIFI 5G	Y	Y	Y	Y
4	BT+WIFI 5G	N	N	N	N
5	BT+WIFI 2.4G	N	N	N	N

Note:
1) The device does not support DTM function.
2) For Wi-Fi 5G, U-NII-2A (5250-5350 MHz) and U-NII-2C (5470-5725 MHz) bands does not support hotspot function.

8.4.2 Simultaneous Transmission SAR Summation Scenario

Test position			Main Antenna SARmax (W/kg)																	WiFi/BT Antenna SARmax (W/kg)			Summed 1g SARmax (W/kg)
		GSM 850	GSM 1900	WCDMA Band II	WCDMA Band IV	WCDMA Band V	CDMA BC0	CDMA BC1	CDMA BC10	LTE Band 7	LTE Band 12	LTE Band 13	LTE Band 25	LTE Band 26	LTE Band 38	LTE Band 41	LTE Band 66	LTE Band 71	WLAN 2.4G	WLAN 5G	BT	
Head	Left cheek	0.249	0.090	0.445	0.199	0.243	0.196	0.387	0.167	0.158	0.172	0.184	0.392	0.236	0.209	0.178	0.156	0.197	0.888	0.666	0.320	1.333
	Left tilted	0.151	0.080	0.217	0.111	0.149	0.118	0.196	0.099	0.130	0.107	0.125	0.199	0.146	0.140	0.143	0.097	0.111	0.655	0.481	0.228	0.872
	Right cheek	0.290	0.083	0.230	0.234	0.311	0.212	0.253	0.169	0.113	0.219	0.212	0.258	0.297	0.140	0.121	0.230	0.258	0.324	0.208	0.119	0.635
	Right tilted	0.177	0.131	0.265	0.117	0.167	0.132	0.216	0.111	0.091	0.111	0.142	0.229	0.170	0.083	0.077	0.115	0.113	0.346	0.199	0.127	0.611
Body worn 15mm	Front side	0.234	0.117	0.280	0.240	0.220	0.174	0.320	0.162	0.422	0.280	0.235	0.353	0.159	0.380	0.311	0.294	0.249	0.110	0.113	\	0.535
	Back side	0.281	0.277	0.599	0.387	0.356	0.267	0.546	0.245	0.200	0.365	0.300	0.638	0.292	0.209	0.251	0.365	0.331	0.165	0.555	\	1.193
Hotspot 10mm	Front side	0.222	0.189	0.633	0.432	0.254	0.201	0.628	0.187	0.509	0.240	0.319	0.694	0.177	0.673	0.702	0.454	0.204	0.192	0.180	0.050	0.894
	Back side	0.425	0.374	0.862	0.513	0.561	0.461	0.977	0.355	0.385	0.365	0.363	1.037	0.661	0.556	0.502	0.730	0.318	0.166	0.338	0.080	1.375
	Left side	0.144	0.175	0.616	0.342	0.170	0.125	0.572	0.120	0.185	0.239	0.172	0.618	0.119	0.190	0.160	0.351	0.268	\	\	\	0.618
	Right side	0.213	0.059	0.214	0.128	0.268	0.205	0.206	0.186	0.142	0.514	0.294	0.221	0.192	0.128	0.107	0.126	0.485	0.176	0.508	0.047	1.022
	Top side	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	0.289	0.221	0.053	0.289
	Bottom side	0.281	0.265	0.657	0.568	0.323	0.251	0.721	0.199	0.802	0.225	0.247	1.012	0.206	0.527	0.488	0.641	0.272	\	\	\	1.012

Test position			Main Antenna SARmax (W/kg)																	WiFi/BT Antenna SARmax (W/kg)			Summed 10g SARmax (W/kg)
		GSM 850	GSM 1900	WCDMA Band II	WCDMA Band IV	WCDMA Band V	CDMA BC0	CDMA BC1	CDMA BC10	LTE Band 7	LTE Band 12	LTE Band 13	LTE Band 25	LTE Band 26	LTE Band 38	LTE Band 41	LTE Band 66	LTE Band 71	WLAN 2.4G	WLAN 5G	BT	
Product Specific 10-g SAR	Front side	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	0.233	\	0.233
	Back side	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	0.521	\	0.521
	Left side	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	0.000
	Right side	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	0.985	\	0.985
	Top side	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	0.149	\	0.149
	Bottom side	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	0.000

9 Equipment list

Test Platform	SPEAG DASY5 Professional
Description	SAR Test System (Frequency range 300MHz-6GHz)
Software Reference	DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Hardware Reference

Equipment		Manufacturer	Model	Serial Number	Calibration Date	Due date of calibration
☒	Twin Phantom	SPEAG	SAM 5	1481	NCR	NCR
☒	Twin Phantom	SPEAG	SAM 6	1824	NCR	NCR
☒	Twin Phantom	SPEAG	SAM 7	1702	NCR	NCR
☒	DAE	SPEAG	DAE4	1374	2019-09-24	2020-09-23
☒	DAE	SPEAG	DAE3	414	2019-12-17	2020-12-16
☒	E-Field Probe	SPEAG	EX3DV4	3748	2020-07-29	2021-07-28
☒	E-Field Probe	SPEAG	EX3DV4	3962	2020-04-01	2021-03-31
☒	E-Field Probe	SPEAG	EX3DV4	3789	2020-06-16	2021-06-17
☒	Validation Kits	SPEAG	D750V3	1160	2019-05-22	2022-05-21
☒	Validation Kits	SPEAG	D835V2	4d105	2019-12-17	2022-12-16
☒	Validation Kits	SPEAG	D1750V2	1149	2019-05-21	2022-05-20
☒	Validation Kits	SPEAG	D1900V2	5d028	2019-12-17	2022-12-16
☒	Validation Kits	SPEAG	D2450V2	733	2019-12-17	2022-12-16
☒	Validation Kits	SPEAG	D2600V2	1125	2019-05-20	2022-05-19
☒	Validation Kits	SPEAG	D5GHzV2	1165	2019-12-20	2022-12-19
☒	Agilent Network Analyzer	Agilent	E5071C	MY46523591	2020-04-16	2021-04-15
☒	Dielectric Probe Kit	Agilent	85070E	US01440210	NCR	NCR
☒	Universal Radio Communication Tester	R&S	CMW500	111637	2020-04-16	2021-04-15
☒	Radio Communication Analyzer	Anritsu	MT8821C	6201502984	2020-06-11	2021-06-10
☒	RF Bi-Directional Coupler	Agilent	86205-60001	MY31400031	NCR	NCR
☒	Signal Generator	Agilent	N5171B	MY53050736	2020-04-15	2021-04-14
☒	Preamplifier	Mini-Circuits	ZHL-42W	15542	NCR	NCR
☒	Preamplifier	Compliance Directions Systems Inc.	AMP28-3W	073501433	NCR	NCR
☒	Power Meter	Agilent	E4416A	GB41292095	2020-04-15	2021-04-14
☒	Power Sensor	Agilent	8481H	MY41091234	2020-04-15	2021-04-14
☒	Power Sensor	R&S	NRP-Z92	100025	2020-04-16	2021-04-15

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☒	Attenuator	SHX	TS2-3dB	30704	NCR	NCR
☒	Coaxial low pass filter	Mini-Circuits	VLF-2500(+)	NA	NCR	NCR
☒	Coaxial low pass filter	Microlab Fxr	LA-F13	NA	NCR	NCR
☒	50 Ω coaxial load	Mini-Circuits	KARN-50+	00850	NCR	NCR
☒	DC POWER SUPPLY	SAKO	SK1730SL5A	NA	NCR	NCR
☒	Speed reading thermometer	MingGao	T809	NA	2020-04-21	2021-04-20
☒	Humidity and Temperature Indicator	KIMTOKA	KIMTOKA	NA	2020-04-21	2021-04-20

Note: All the equipments are within the valid period when the tests are performed.

10 Calibration certificate

Please see the Appendix C

11 Photographs

Please see the Appendix D

Appendix A: Detailed System Check Results

Appendix B: Detailed Test Results

Appendix C: Calibration certificate

Appendix D: Photographs

Appendix E: Conducted RF Output Power Table

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