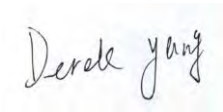
FCC SAR TEST REPORT

Report No:	ZR/2020/40003
Applicant:	Xiaomi Communications Co., Ltd.
Manufacturer:	Xiaomi Communications Co., Ltd.
Product Name:	Mobile Phone
Model No.(EUT):	M2004J19G
Trade Mark:	Redmi
FCC ID:	2AFZZJ19G
Standards:	FCC 47CFR §2.1093
Date of Receipt:	2020-04-10
Date of Test:	2020-04-22 to 2020-04-28
Date of Issue:	2020-05-01
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/2020/4000306	01	Original	2020-05-01

TEST SUMMARY

Frequency Band	Max Reported SAR10g(W/kg)			
	Head	Body worn 10mm	Hotspot 10mm	Product specific 10g SAR
GSM850	**0.913**	0.441	0.619	/
GSM1900	0.075	0.359	0.889	/
WCDMA Band II	0.133	0.851	0.851	/
WCDMA Band IV	0.093	**0.999**	**0.999**	/
WCDMA Band V	0.888	0.476	0.476	/
LTE Band 2	0.138	0.657	0.795	/
LTE Band 4	0.091	0.817	0.817	/
LTE Band 5	0.812	0.456	0.456	/
LTE Band 7	0.316	0.729	0.729	/
LTE Band 38	0.176	0.263	0.263	/
LTE Band 41	0.042	0.593	0.593	/
WIFI 2.4G	0.777	0.269	0.269	/
WIFI 5G	0.725	0.455	0.397	**0.674**
BT	0.122	<0.100	<0.100	/
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	1.55	1.48	1.28	0.89
SPLSR	N/A	N/A	N/A	N/A
SPLSR Limited	0.04			0.1

Approved & Released by

Simon Ling

SAR Manager

Tested by

Jackson Li

SAR Engineer

CONTENTS

1 General Information

1.1 Details of Client

Applicant:	Xiaomi Communications Co., Ltd.
Address:	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
Manufacturer:	Xiaomi Communications Co., Ltd.
Address:	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

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 17025:2005 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

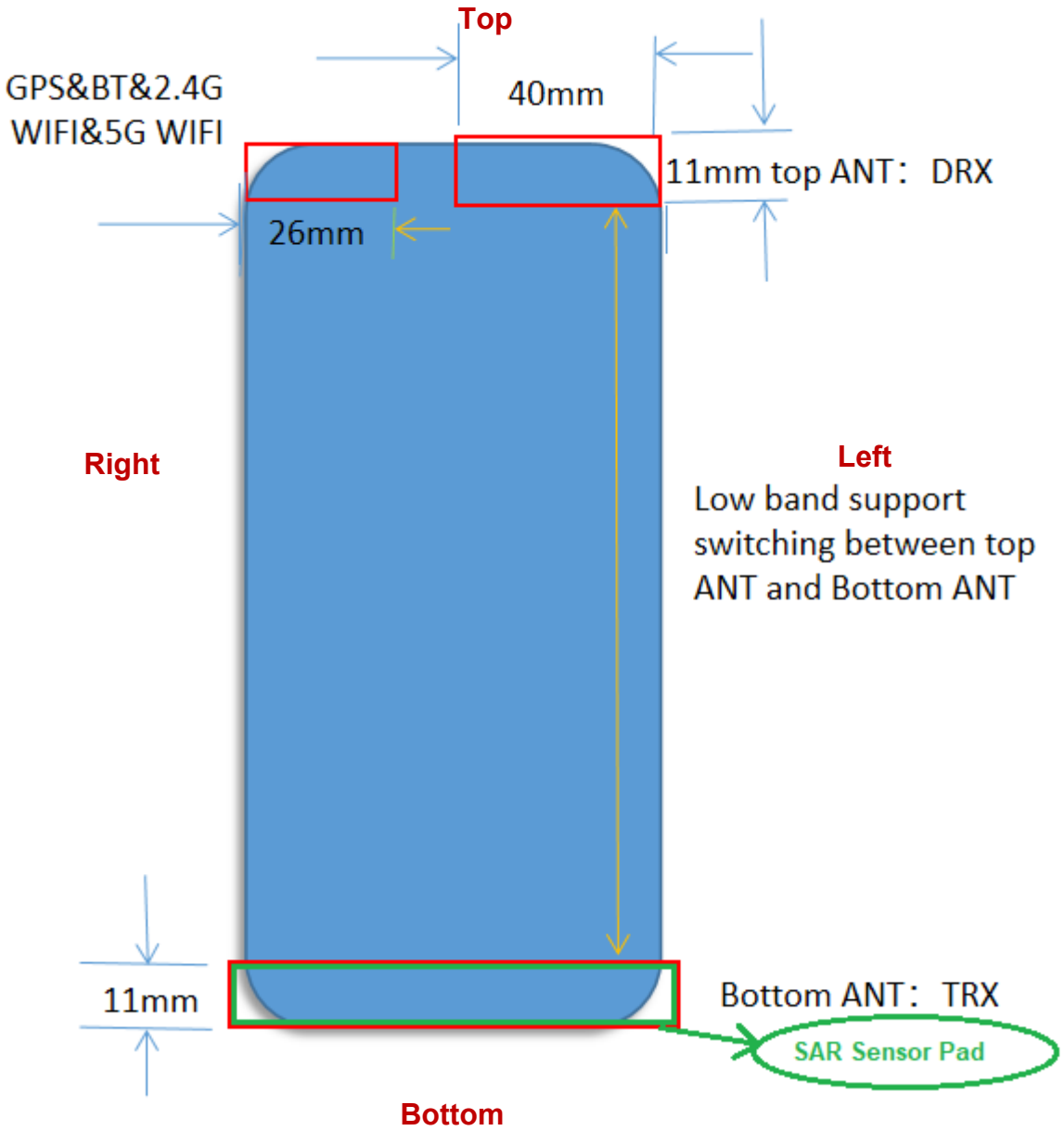
IC#: 4620C.

1.4 General Description of EUT

Product Name:	Mobile Phone		
Model No.(EUT):	M2004J19G		
Trade Mark:	Redmi		
FCC ID:	2AFZZJ19G		
Device Type :	portable device		
Exposure Category:	uncontrolled environment / general population		
Product Phase:	Identical Prototype		
IMEI:	860951040034962/78; 860951040027149/78; 860951040027768/78		
Hardware Version:	P2		
Software Version:	MIUI11		
Antenna Type:	PIFA Antenna		
Device Operating Configurations :			
Modulation Mode:	**GSM:** GMSK, 8PSK; **WCDMA:** 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:	24	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 Max Power(LTE Band 2/4/5/7/38/41)		
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
	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 38	2570~2620	2570~2620
	LTE Band 41	2540~2640	2540~2640
	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
		5725~5825	5725~5825

Battery Information:	Model:	BN54
	Normal Voltage:	+3.87V
	Rated capacity:	4920mAh
	Manufacturer:	Ningde Amperex Technology Limited
Headset Information:	Model:	EM023
	Manufacturer:	Tiinlab Acoustic Technology (Shenzhen) Co., Ltd.

1.4.1 DUT Antenna Locations



Note:

1) SAR Proximity sensor location is same as Bottom antenna(Ant1).
2) Bottom antenna(Ant1): GSM850/1900, WCDMA Band II/IV/V, LTE Band 2/4/5/7/38/41;
   Top antenna(Ant2): GSM850, WCDMA Band V, LTE Band 5;
3) 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.

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
Bottom antenna (Ant1)	Hotspot/Product specific 10g SAR	Yes	Yes	Yes	Yes	No	Yes
Top antenna (Ant2)	Hotspot/Product specific 10g SAR	Yes	Yes	Yes	No	Yes	No
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.
2) WWAN antenna(Ant1/2) can't transmit simultaneously which will be chosen based on the RSSI. Only one antenna can be used for 2G/3G/4G transmission at a time.

1.4.2 LTE CA additional specification

The device supports downlink and intra-band contiguous uplink LTE Carrier Aggregation (CA). When carrier aggregation applies, implementation and measurement details for the following are necessary.

a) Intra-band carrier aggregation requirements for uplink.

b) Intra-band and inter-band carrier aggregation requirements for downlink.

The possible downlink and uplink LTE CA combinations supported by this device are as below tables per 3GPP TS 36.101 V15.4.0. The conducted power measurement results of downlink and uplink LTE CA are provided in Section 8 of this report per 3GPP TS 36.521-1 V14.4.0. 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.

SAR test procedure for intra-band contiguous UL LTE CA is as below:

1)Maximum output power is measured for each UL CA configuration for the required test channels described in KDB 941225 D05

- UL PCC configuration is determined by the required test channel

- SCC and subsequent CCs are added alternatively to either side of the PCC or within the transmission band for channels at the ends of a frequency band.

2)SAR for UL CA is required in each exposure condition and frequency band combination

3)For this device , as the maximum output for Intra-band uplink LTE CA is ≤ standalone LTE mode (without CA),

- PCC is configured according to the highest standalone SAR configuration tested.

- SCC and subsequent CCs are configured according to procedures used for power measurement and parameters (BW, RB etc.) similar to that used for the PCC

4)When the reported SAR for UL CA configuration, described above, is > 1.2 W/kg, UL CA SAR is also required for all required test channels (PCC based)

5)UL CA SAR is also required for standalone SAR configurations > 1.2 W/kg when they are scaled to the UL CA power level.

Intra-band contiguous CA operating bands：

E-UTRA CA Band	E-UTRA Band	Uplink (UL) operating band			Downlink (DL) operating band			Duplex Mode
		BS receive / UE transmit			BS transmit / UE receive			
		F_{UL_low} – F_{UL_high}			F_{DL_low} – F_{DL_high}			
CA_7	7	2500 MHz	–	2570 MHz	2620 MHz	–	2690 MHz	FDD
CA_38	38	2570 MHz	–	2620 MHz	2570 MHz	–	2620 MHz	TDD

contiguous intra-band CA:

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

Test frequencies for CA_7C:

Range	CC-Combo / NRB_agg [RB]	CC1 Note1					CC2 Note1				
		BW [RB]	N_{UL}	f_{UL} [MHz]	N_{DL}	f_{DL} [MHz]	BW [RB]	N_{UL}	f_{UL} [MHz]	N_{DL}	f_{DL} [MHz]
Low	50+100	50	20805	2505.5	2805	2625.5	100	20949	2519.9	2949	2639.9
		100	20850	2510	2850	2630	50	20994	2524.4	2994	2644.4
	75+75	75	20825	2507.5	2825	2627.5	75	20975	2522.5	2975	2642.5
	75+100	75	20828	2507.8	2828	2627.8	100	20999	2524.9	2999	2644.9
		100	20850	2510	2850	2630	75	21021	2527.1	3021	2647.1
	100+100	100	20850	2510	2850	2630	100	21048	2529.8	3048	2649.8
Mid	50+100	50	21006	2525.6	3006	2645.6	100	21150	2540	3150	2660
		100	21051	2530.1	3051	2650.1	50	21195	2544.5	3195	2664.5
	75+75	75	21025	2527.5	3025	2647.5	75	21175	2542.5	3175	2662.5
	75+100	75	21003	2525.3	3003	2645.3	100	21174	2542.4	3174	2662.4
		100	21026	2527.6	3026	2647.6	75	21197	2544.7	3197	2664.7
	100+100	100	21001	2525.1	3001	2645.1	100	21199	2544.9	3199	2664.9
High	50+100	50	21206	2545.6	3206	2665.6	100	21350	2560	3350	2680
		100	21251	2550.1	3251	2670.1	50	21395	2564.5	3395	2684.5
	75+75	75	21225	2547.5	3225	2667.5	75	21375	2562.5	3375	2682.5
	75+100	75	21179	2542.9	3179	2662.9	100	21350	2560	3350	2680
		100	21201	2545.1	3201	2665.1	75	21372	2562.2	3372	2682.2
	100+100	100	21152	2540.2	3152	2660.2	100	21350	2560	3350	2680
Note 1: Carriers in increasing frequency order.											

Test frequencies for CA_38C：

Range	CC-Combo / NRB_agg [RB]	CC1 Note1			CC2 Note1		
		BW [RB]	$N_{UL/DL}$	$f_{UL/DL}$ [MHz]	BW [RB]	$N_{UL/DL}$	$f_{UL/DL}$ [MHz]
Low	75+75	75	37825	2577.5	75	37975	2592.5
	100+100	100	37850	2580	100	38048	2599.8
Mid	75+75	75	37925	2587.5	75	38075	2602.5
	100+100	100	37901	2585.1	100	38099	2604.9
High	75+75	75	38025	2597.5	75	38175	2612.5
	100+100	100	37952	2590.2	100	38150	2610
Note 1: Carriers in increasing frequency order.							

1.4.3 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 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.

2) 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 Bottom 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.

Ant1 Power Level(dBm)	
Power Reduction Scenario	WCDMA Band II
Receiver off	24.5
Receiver on	23.5

Ant2 Power Level(dBm)		
Power Reduction Scenario	WCDMA Band V	LTE Band 5
Receiver off	24.5	24.0
Receiver on	23.0	22.5

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℃, Max. = 25 ℃
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

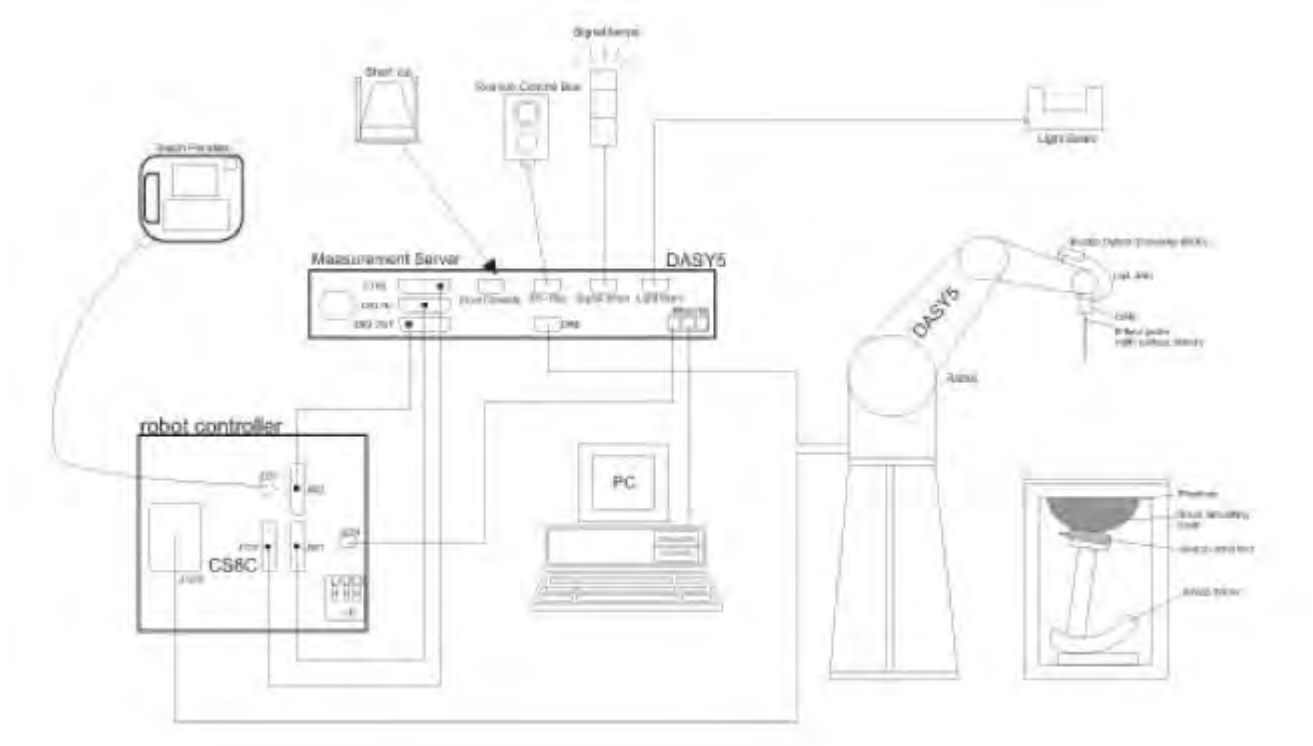
This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY5 professional system). A E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ (|Ei|2)/ ρ where σ and ρ are the conductivity and mass density of the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

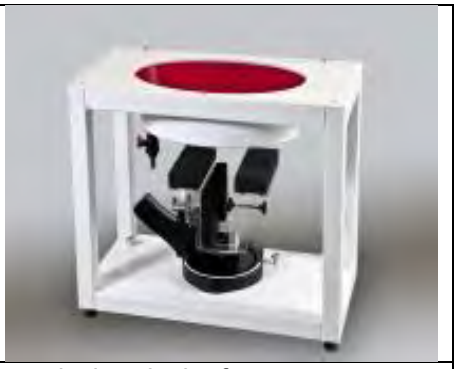
Material	Vinylester, glass fiber reinforced (VE-GF)
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)
Dimensions (incl. Wooden Support)	Length: 1000 mm Width: 500 mm Height: adjustable feet
Filling Volume	approx.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

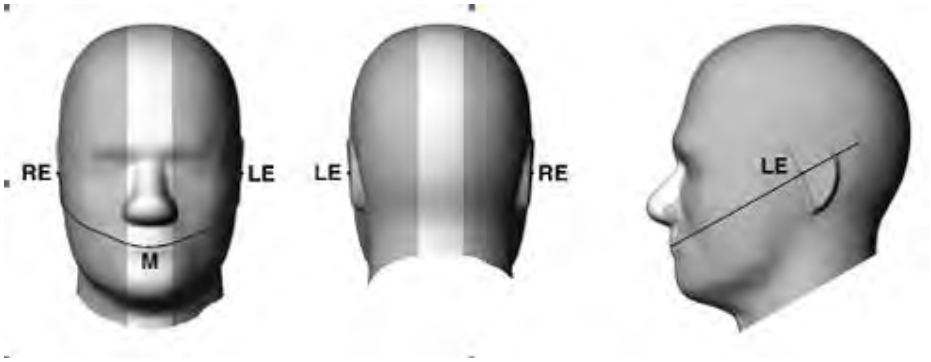
4.2 SAR measurement uncertainty

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

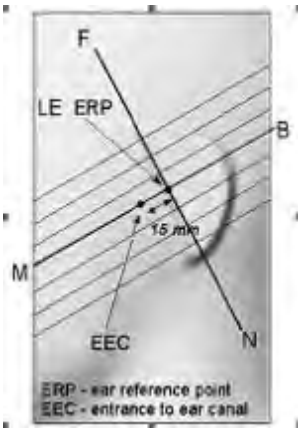
5.1.1 SAM Phantom Shape



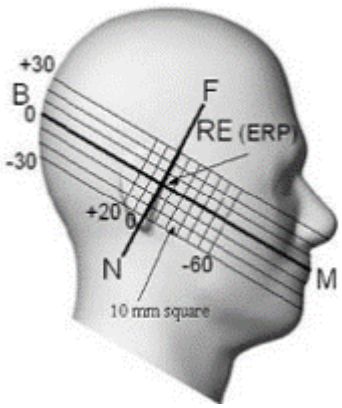
F-3. Front, back, and side views of SAM (model for the phantom shell). Full-head model is for illustration purposes only-procedures in this recommended practice are intended primarily for the phantom setup.

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)

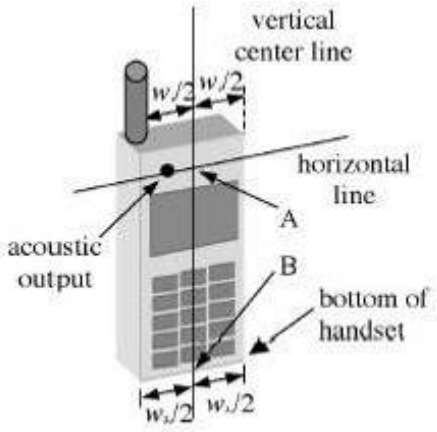


F-5. Close-up side view of phantom, showing the ear region, N-F and B-M lines, and seven cross-sectional plane locations

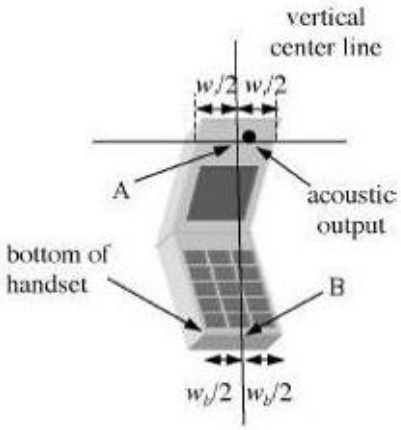


F-6. Side view of the phantom showing relevant markings and seven cross-sectional plane locations

5.1.2 EUT constructions



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



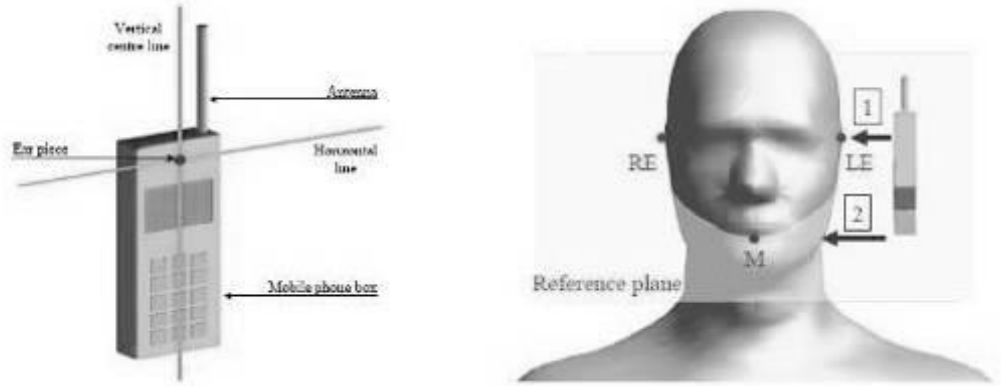
F-8. Handset vertical and horizontal reference lines-“clam-shell case”

5.1.3 Definition of the “cheek” position

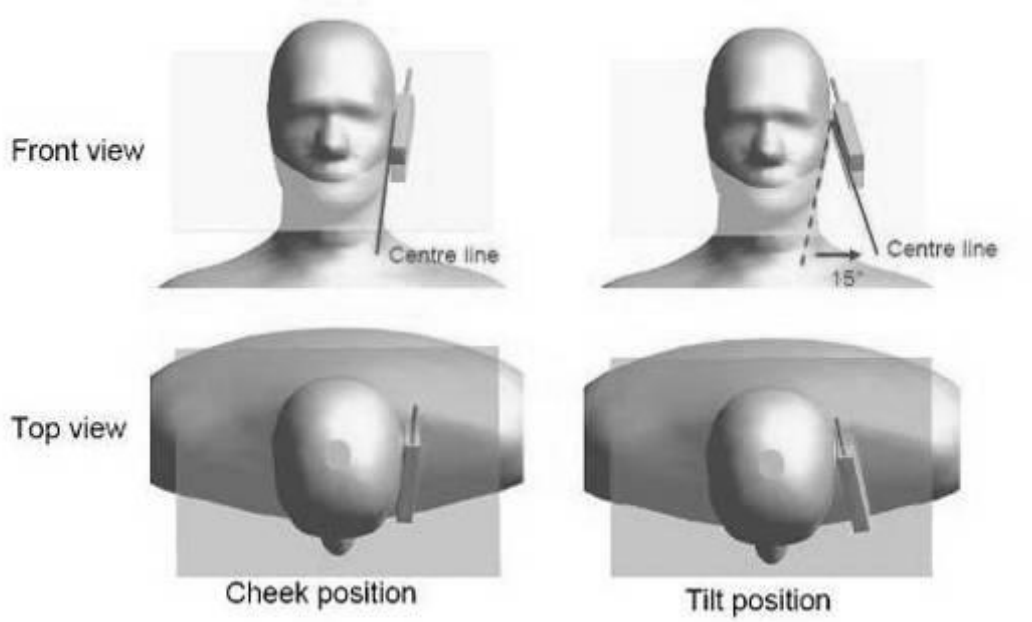
a) Position the device with the vertical centre line of the body of the device and the horizontal line crossing the centre of the ear piece in a plane parallel to the sagittal plane of the phantom ("initial position"). While maintaining the device in this plane, align the vertical centre line with the 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

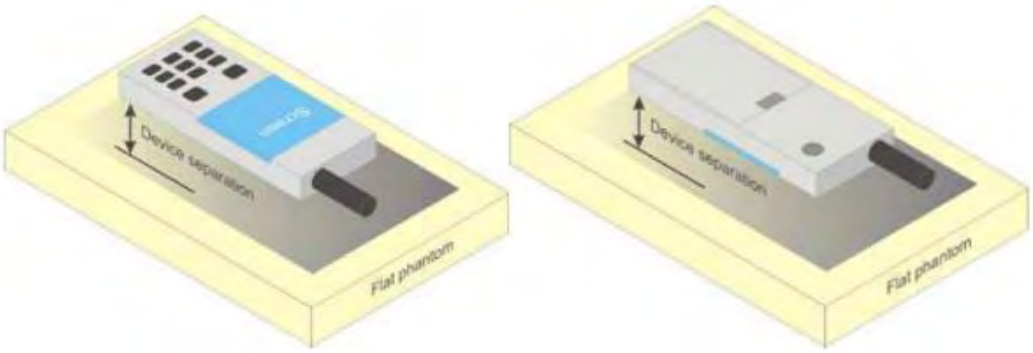
5.2.1 Body-worn accessory exposure conditions

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

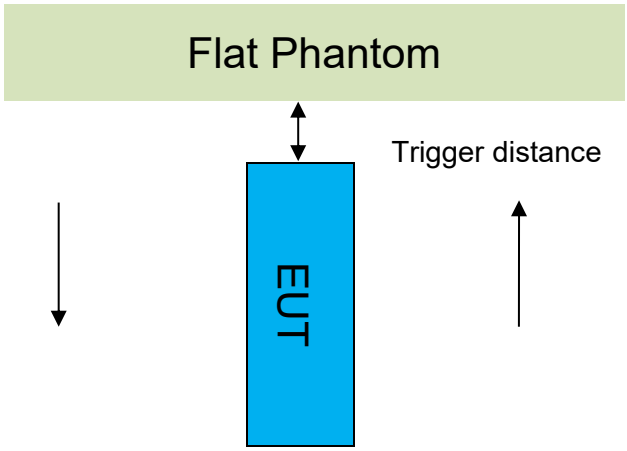
Per FCC KDB 648474D04, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, the device is marketed as “Phablet”.
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 Bottom/Top antenna frequency bands are not required to test with 0mm for the Product Specific 10 g SAR.

5.4 Proximity Sensor Triggering Test

1) Proximity sensor triggering distances：

The Proximity sensor triggering was applied to WCDMA Band II with Bottom Antenna(Ant1). 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.

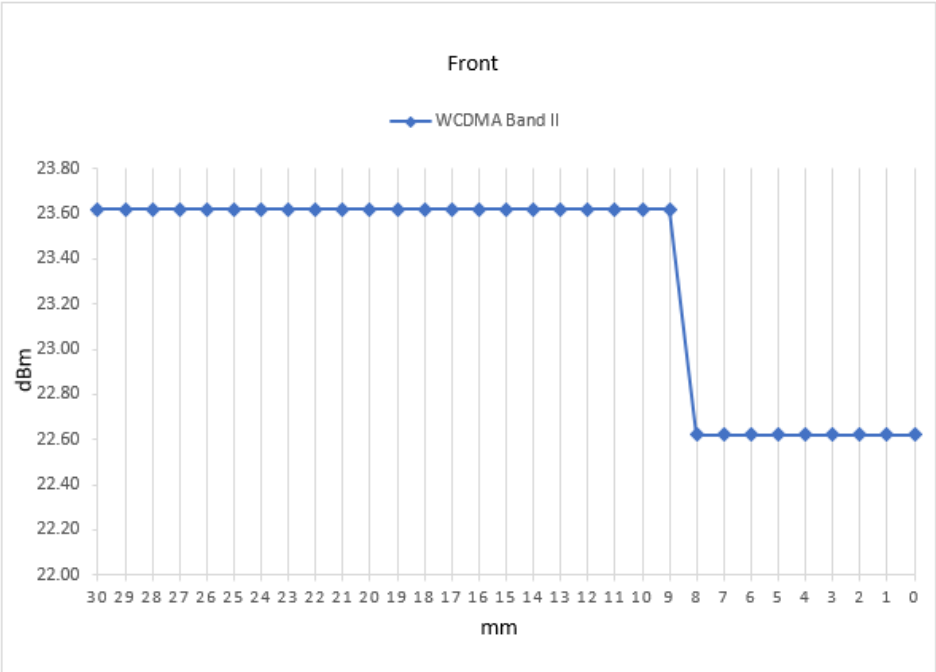


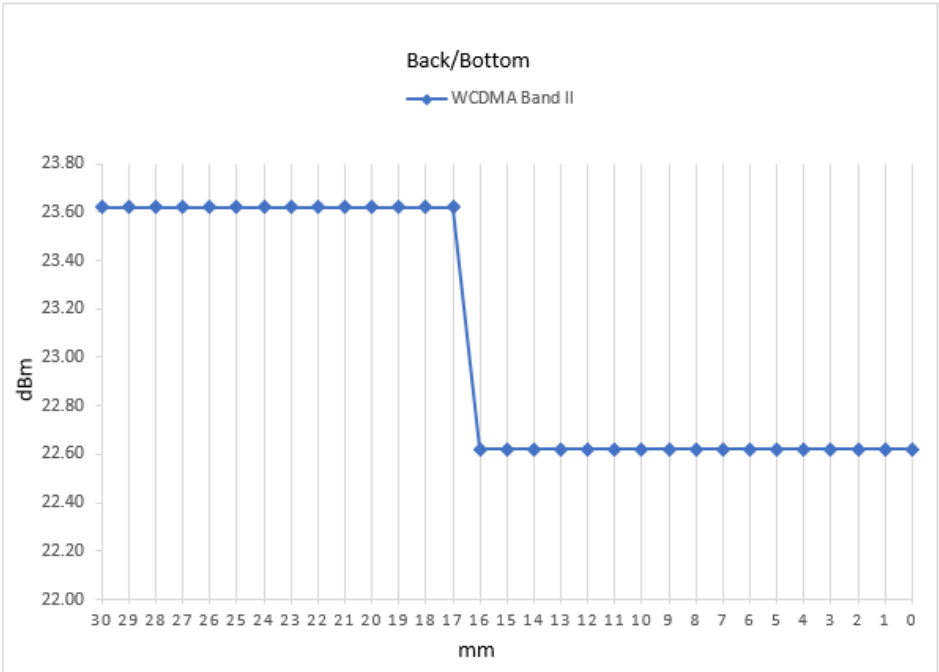
	Proximity Sensor Triggering Distance(mm)		
Position	Front side	Back side	Bottom side
Minimum	8	16	16
Required SAR Test	/	15	15

Band	Sensor Trigger Distance	Power reduction (dB)
WCDMA Band II (Ant1)	Front side: 8mm Back side: 16mm Bottom side: 16mm	1.0

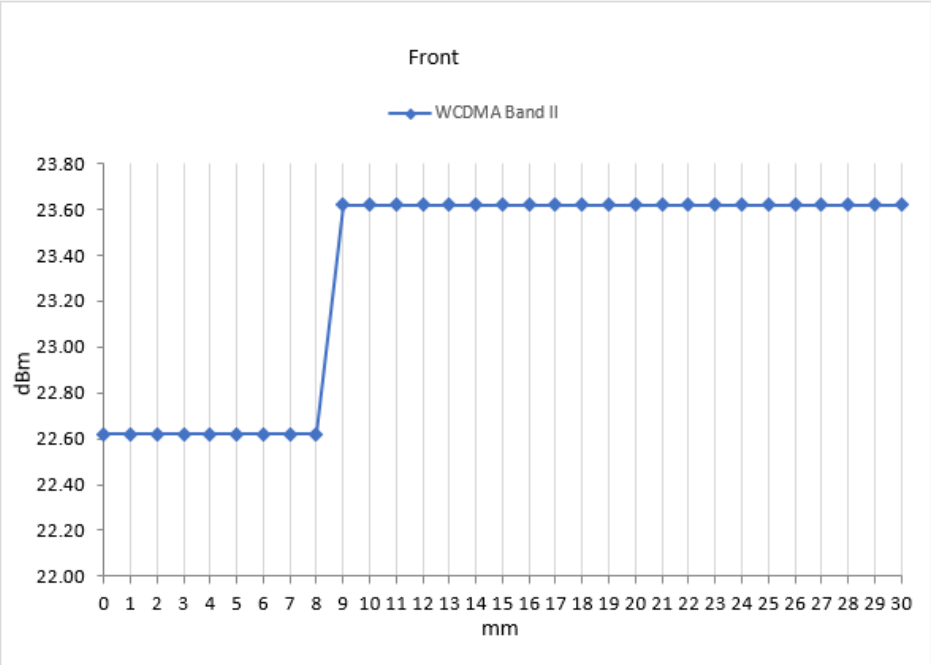
Note: SAR tests with proximity sensor power reduction are only required for the sides of frequency bands in the table above. For the other sides or other frequency bands of the device, SAR is still tested at the maximum power level with sensor off.

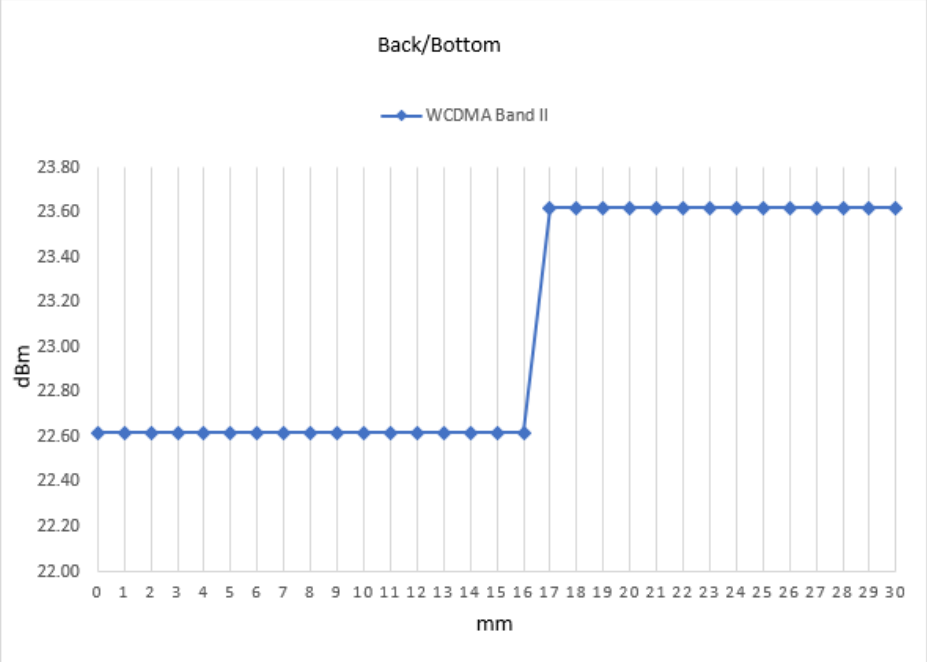
- DUT Moving Toward(Trigger)the Phantom





- DUT Moving Away(Release) from the Phantom





2) Proximity sensor coverage

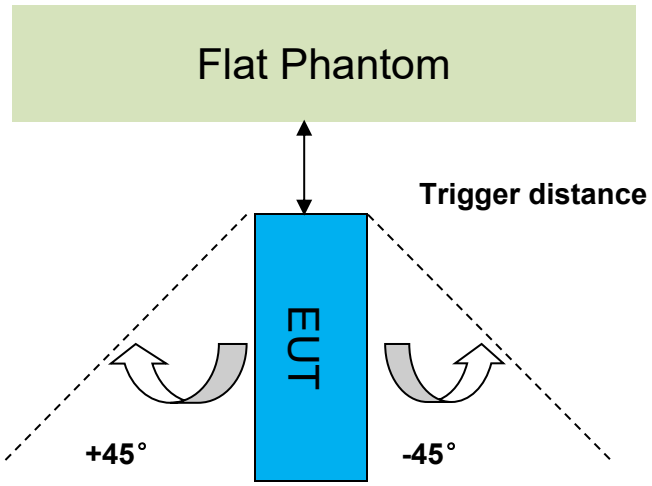
If a sensor is spatially offset from the antenna(s), it is necessary to verify sensor triggering for conditions where the antenna is next to the user but the sensor is laterally further away to ensure sensor coverage is sufficient for reducing the power to maintain compliance. For p-sensor coverage testing,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

3) 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, at 16mm separation.

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												
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°
WCDMA Band II (Ant 1)	Bottom side:16mm	Bottom side:16mm	on	on	on	on	on	on	on	on	on	on	on

SAR test plan:
For Back/ Bottom side, the worst trigger distance of proximity sensor is 16mm, thus we test back/bottom side SAR in 15mm without power reduction and 0mm with power reduction. But for Front side, the worst trigger distance of proximity sensor is 8mm, less than 10mm, thus we test Front side SAR in 10mm at the maximum power level with sensor off.

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

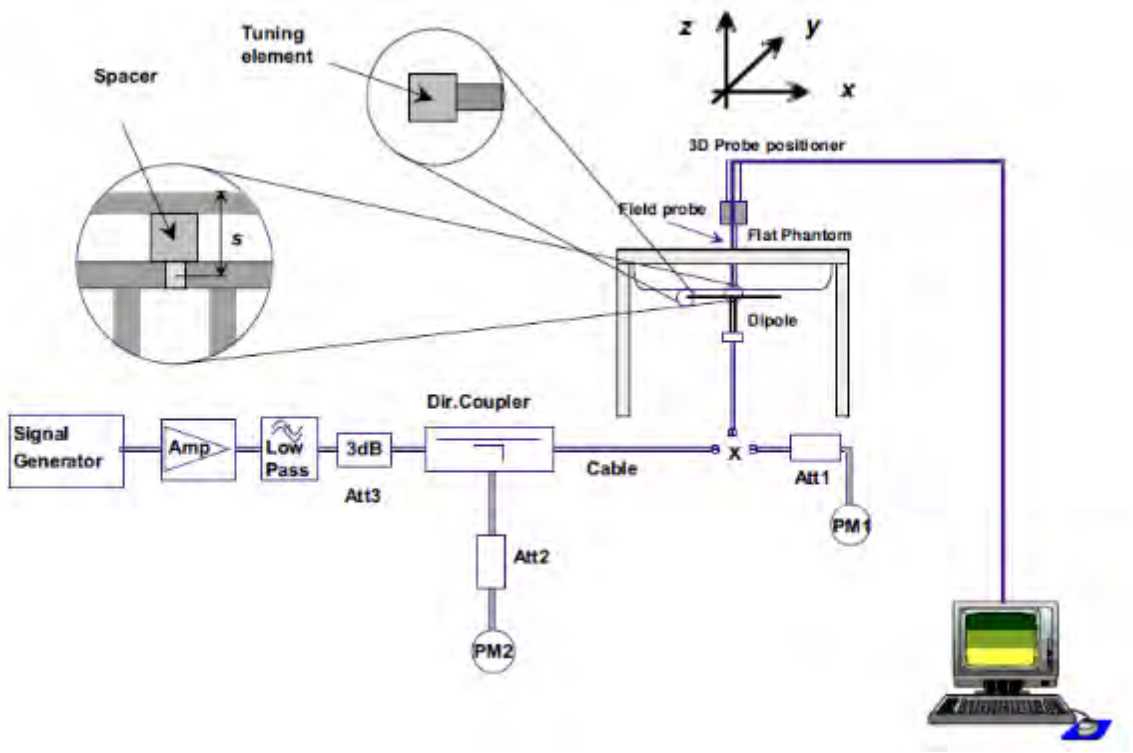
The dielectric properties for this Tissue Simulate Liquids were measured by using the Agilent Model 85070E Dielectric Probe in conjunction with Agilent E5071C Network Analyzer (300 KHz-8500 MHz). The Conductivity (σ) and Permittivity (ρ) are listed in bellow table. For the SAR measurement given in this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

Tissue Type	Measured Frequency (MHz)	Target Tissue (±5%)		Measured Tissue		Liquid Temp.	Measured Date
		ε_r	σ(S/m)	ε_r	σ(S/m)	(℃)	
835 Head	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	42.142	0.936	22.0	2020/04/23
835 Head	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	41.778	0.939	22.0	2020/04/24
1750 Head	1750	40.10 (38.10~42.11)	1.37 (1.30~1.44)	39.574	1.330	21.7	2020/04/22
1900 Head	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	41.526	1.408	22.1	2020/04/23
2450 Head	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	40.721	1.824	22.0	2020/04/24
2600 Head	2600	39.00 (37.05~40.95)	1.96 (1.86~2.06)	40.181	1.994	22.1	2020/04/28
5250Head	5250	35.90 (34.11~37.70)	4.71 (4.47~4.95)	36.730	4.675	22.3	2020/04/26
5600 Head	5600	35.50 (33.73~37.30)	5.07 (4.82~5.32)	35.778	5.059	22.3	2020/04/25
5750 Head	5750	35.40 (33.63~37.17)	5.22 (4.96~5.48)	35.414	5.229	22.3	2020/04/27

Table 4： Measurement result of Tissue electric parameters

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°C, 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 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)		
D835V2	Head	2.60	1.70	10.40	6.80	9.64 (8.68~10.60)	6.29 (5.66~6.92)	22.0	2020/04/23
D835V2	Head	2.61	1.70	10.44	6.80	9.64 (8.68~10.60)	6.29 (5.66~6.92)	22.0	2020/04/24
D1750V2	Head	9.26	4.92	37.04	19.68	36.30 (32.67~39.93)	19.20 (17.28~21.12)	21.7	2020/04/22
D1900V2	Head	10.40	5.38	41.60	21.52	39.30 (35.37~43.23)	20.20 (17.28~22.22)	22.1	2020/04/23
D2450V2	Head	13.30	6.16	53.20	24.64	51.90 (46.71~57.09)	23.80 (21.42~26.18)	22.0	2020/04/24
D2600V2	Head	14.00	6.29	56.00	25.16	56.80 (51.12~62.48)	24.90 (22.41~27.39)	22.1	2020/04/28
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)	7.89	2.27	78.90	22.70	75.20 (67.68~82.72)	21.50 (19.35~23.65)	22.3	2020/04/26
	Head (5.6GHz)	8.40	2.40	84.00	24.00	80.00 (72.00~88.00)	22.70 (20.43~24.97)	22.3	2020/04/25
	Head (5.75GHz)	7.77	2.21	77.70	22.10	78.70 (70.83~86.57)	22.30 (20.07~24.53)	22.3	2020/04/27

Table 5： SAR System Check Result

6.2.2 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 CMU200 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 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_c (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.

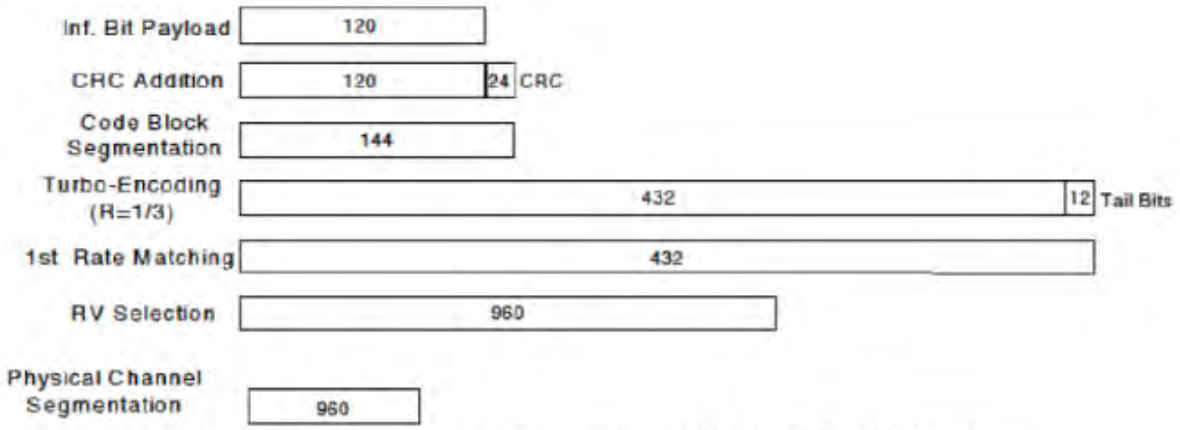


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

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

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.

d) HSPA+

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

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

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed}1: 30/15 β_{ed}2: 30/15	β_{ed}3: 24/15 β_{ed}4: 24/15	3.5	2.5	14	105	105

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

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

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

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

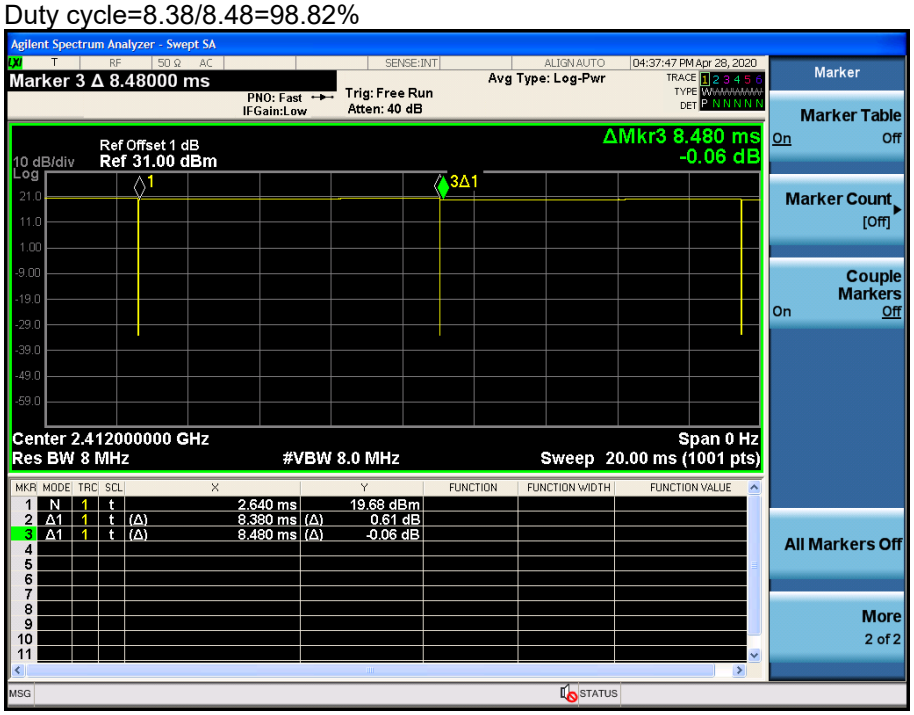
Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

7.2.3 WiFi Test Configuration

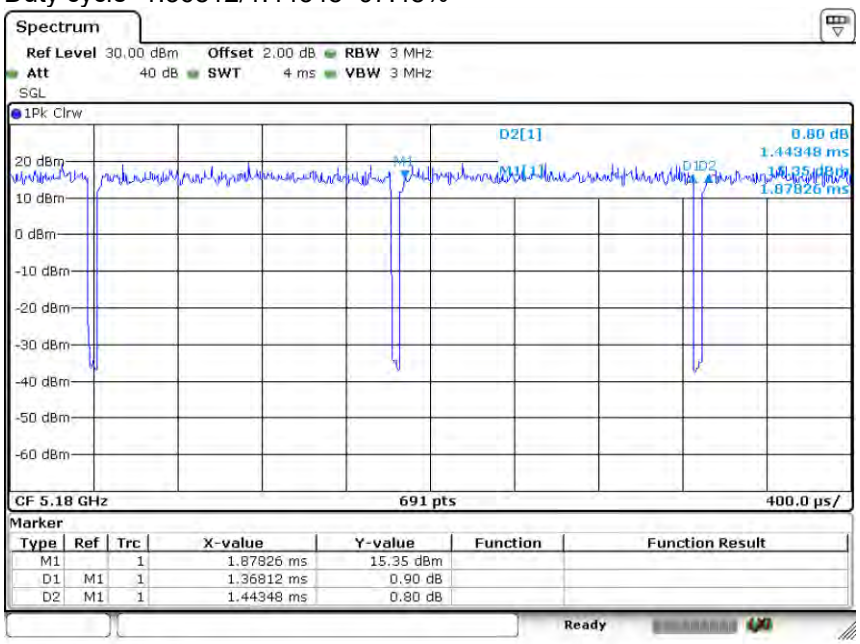
A Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools for SAR measurement.

7.2.3.1 Duty cycle

1) Wi-Fi 2.4GHz 802.11b:
Duty cycle=8.38/8.48=98.82%



2) Wi-Fi 5GHz 802.11a:
Duty cycle=1.36812/1.44348=97.48%



7.2.3.2 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.

7.2.3.3 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.

7.2.3.4 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”

7.2.3.5 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.

7.2.3.6 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.

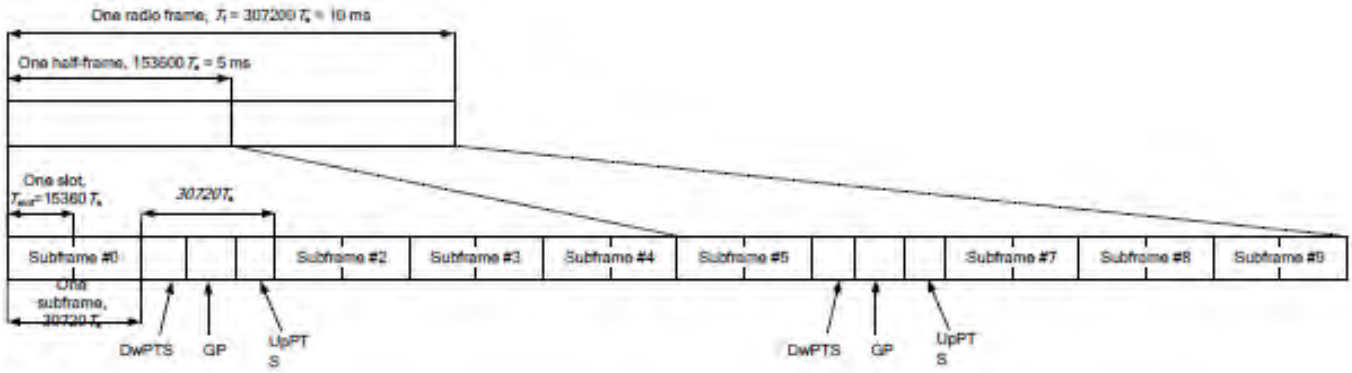
7.2.4 LTE Test Configuration

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

8.1.1 Conducted Power of Bottom Antenna(Ant1)

8.1.1.1 Conducted Power of GSM

GSM 850										
Burst Output Power(dBm)					Tune up	Division Factors	Frame-Average Output Power(dBm)			Tune up
Channel		128	190	251			128	190	251	
GSM(GMSK)	GSM	32.57	**32.51**	32.59	33.50	-9.19	23.38	23.32	23.40	24.31
GPRS/ EGPRS (GMSK)	1 TX Slot	32.53	32.42	32.56	33.50	-9.19	23.34	23.23	23.37	24.31
	2 TX Slots	31.60	31.72	31.89	32.50	-6.18	25.42	25.54	25.71	26.32
	3 TX Slots	29.82	29.87	30.00	30.50	-4.42	25.40	25.45	25.58	26.08
	4 TX Slots	28.64	**28.77**	28.99	29.50	-3.17	25.47	25.60	25.82	**26.33**
EGPRS (8PSK)	1 TX Slot	27.30	27.44	27.46	27.50	-9.19	18.11	18.25	18.27	18.31
	2 TX Slots	26.00	26.10	26.46	26.50	-6.18	19.82	19.92	20.28	20.32
	3 TX Slots	23.66	23.75	24.00	24.50	-4.42	19.24	19.33	19.58	20.08
	4 TX Slots	22.24	22.52	22.90	23.50	-3.17	19.07	19.35	19.73	20.33
GSM 1900										
Burst Output Power(dBm)					Tune up	Division Factors	Frame-Average Output Power(dBm)			Tune up
Channel		512	661	810			512	661	810	
GSM(GMSK)	GSM	29.81	**29.75**	29.98	30.50	-9.19	20.62	20.56	20.79	21.31
GPRS/ EGPRS (GMSK)	1 TX Slot	29.65	29.53	29.99	30.50	-9.19	20.46	20.34	20.80	21.31
	2 TX Slots	28.90	28.82	28.88	29.50	-6.18	22.72	22.64	22.70	23.32
	3 TX Slots	27.32	27.09	27.15	27.50	-4.42	22.90	22.67	22.73	23.08
	4 TX Slots	**26.05**	**26.00**	**26.15**	26.50	-3.17	22.88	22.83	22.98	**23.33**
EGPRS (8PSK)	1 TX Slot	25.87	25.52	26.15	26.50	-9.19	16.68	16.33	16.96	17.31
	2 TX Slots	24.91	25.12	25.23	25.50	-6.18	18.73	18.94	19.05	19.32
	3 TX Slots	22.12	22.62	22.22	23.50	-4.42	17.70	18.20	17.80	19.08
	4 TX Slots	21.97	21.52	21.27	22.50	-3.17	18.80	18.35	18.10	19.33

Table 11：Conducted Power of GSM

Note:

1）. CMU200 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

8.1.1.2 Conducted Power of WCDMA

WCDMA Band II sensor off					
Average Conducted Power(dBm)					
Channel		9262	9400	9538	Tune up
WCDMA	12.2kbps RMC	23.74	**23.62**	23.69	24.50
	12.2kbps AMR	23.70	23.69	23.66	24.50
HSDPA	Subtest 1	22.18	22.16	22.17	24.00
	Subtest 2	22.10	22.08	22.13	24.00
	Subtest 3	21.67	21.62	21.60	23.50
	Subtest 4	21.57	21.57	21.58	23.50
HSUPA	Subtest 1	21.05	21.06	21.09	23.00
	Subtest 2	20.12	20.11	20.11	21.00
	Subtest 3	21.13	21.12	21.14	22.00
	Subtest 4	19.60	19.58	19.54	21.00
	Subtest 5	21.15	21.16	21.19	23.00
DC-HSDPA	Subtest 1	22.18	22.16	22.16	24.00
	Subtest 2	22.05	22.13	22.08	24.00
	Subtest 3	21.70	21.67	21.60	23.50
	Subtest 4	21.53	21.57	21.54	23.50
WCDMA Band II sensor on					
Average Conducted Power(dBm)					
Channel		9262	9400	9538	Tune up
WCDMA	12.2kbps RMC	**22.51**	**22.62**	**22.53**	23.50
	12.2kbps AMR	22.49	22.46	22.45	23.50
HSDPA	Subtest 1	21.23	21.32	21.23	23.00
	Subtest 2	21.15	21.30	21.18	23.00
	Subtest 3	20.73	20.79	20.66	22.50
	Subtest 4	20.76	20.75	20.68	22.50
HSUPA	Subtest 1	20.17	20.13	20.13	22.00
	Subtest 2	19.26	19.24	19.21	20.00
	Subtest 3	20.19	20.18	20.20	21.00
	Subtest 4	18.74	18.71	18.75	20.00
	Subtest 5	20.20	20.20	20.22	22.00
DC-HSDPA	Subtest 1	21.22	21.22	21.19	23.00
	Subtest 2	21.20	21.33	21.17	23.00
	Subtest 3	20.71	20.83	20.66	22.50
	Subtest 4	20.71	20.73	20.70	22.50

WCDMA Band IV					
Average Conducted Power(dBm)					
Channel		1312	1412	1513	Tune up
WCDMA	12.2kbps RMC	**23.74**	**23.91**	**23.91**	24.50
	12.2kbps AMR	23.70	23.81	23.78	24.50
HSDPA	Subtest 1	22.21	22.21	22.17	24.00
	Subtest 2	22.20	22.13	22.14	24.00
	Subtest 3	21.65	21.64	21.63	23.50
	Subtest 4	21.69	21.61	21.62	23.50
HSUPA	Subtest 1	21.14	21.07	21.04	23.00
	Subtest 2	20.21	20.17	20.15	21.00
	Subtest 3	21.24	21.13	21.15	22.00
	Subtest 4	19.68	19.59	19.62	21.00
	Subtest 5	21.25	21.18	21.17	23.00
DC-HSDPA	Subtest 1	22.19	22.17	22.07	24.00
	Subtest 2	22.17	22.18	22.13	24.00
	Subtest 3	21.67	21.64	21.61	23.50
	Subtest 4	21.69	21.65	21.57	23.50
WCDMA Band V					
Average Conducted Power(dBm)					
Channel		4132	4182	4233	Tune up
WCDMA	12.2kbps RMC	23.84	**23.83**	23.70	24.50
	12.2kbps AMR	23.80	23.76	23.68	24.50
HSDPA	Subtest 1	22.44	22.48	22.44	23.00
	Subtest 2	22.43	22.41	22.37	23.00
	Subtest 3	21.93	21.95	21.94	22.50
	Subtest 4	21.89	21.86	21.93	22.50
HSUPA	Subtest 1	21.17	21.06	21.04	23.00
	Subtest 2	20.21	20.17	20.15	21.00
	Subtest 3	21.24	21.14	21.15	22.00
	Subtest 4	19.68	19.59	19.60	21.00
	Subtest 5	21.26	21.17	21.19	23.00
DC-HSDPA	Subtest 1	22.41	22.48	22.45	23.00
	Subtest 2	22.44	22.39	22.32	23.00
	Subtest 3	21.93	21.99	21.94	22.50
	Subtest 4	21.86	21.82	21.91	22.50

Table 12：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.

8.1.1.3 Conducted Power of LTE

LTE Band 2				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 18607	Channel 18900	Channel 19193	Tune up
1.4MHz	QPSK	1	0	23.13	23.06	23.05	24.00
		1	2	23.28	23.20	23.10	24.00
		1	5	23.16	23.03	23.05	24.00
		3	0	23.25	23.25	23.08	24.00
		3	2	23.31	23.27	23.05	24.00
		3	3	23.27	23.22	23.16	24.00
		6	0	22.28	22.16	22.08	23.00
	16QAM	1	0	22.33	22.20	22.05	23.00
		1	2	22.30	22.35	22.72	23.00
		1	5	22.07	22.27	22.21	23.00
		3	0	22.28	22.30	22.12	23.00
		3	2	22.18	22.28	22.11	23.00
		3	3	22.19	22.26	22.10	23.00
		6	0	21.44	21.39	21.15	22.00
	64QAM	1	0	21.19	21.11	20.95	22.00
		1	2	21.23	21.20	21.60	22.00
		1	5	20.94	21.22	21.16	22.00
		3	0	21.14	21.25	21.00	22.00
		3	2	21.03	21.21	20.97	22.00
		3	3	21.13	21.16	20.95	22.00
		6	0	20.30	20.34	20.09	21.00
Bandwidth	Modulation	RB size	RB offset	Channel 18615	Channel 18900	Channel 19185	Tune up
3MHz	QPSK	1	0	23.24	23.22	23.14	24.00
		1	7	23.30	23.38	23.08	24.00
		1	14	23.28	23.14	23.15	24.00
		8	0	22.27	22.19	22.12	23.00
		8	4	22.29	22.10	22.23	23.00
		8	7	22.20	22.24	22.12	23.00
		15	0	22.20	22.23	22.04	23.00
	16QAM	1	0	22.30	22.92	22.68	23.00
		1	7	22.71	22.70	22.79	23.00
		1	14	22.30	22.19	22.05	23.00
		8	0	21.20	21.17	21.25	22.00
		8	4	21.40	21.35	21.23	22.00
		8	7	21.37	21.26	21.35	22.00
		15	0	21.17	21.22	21.06	22.00
	64QAM	1	0	21.18	21.85	21.60	22.00
		1	7	21.61	21.60	21.64	22.00
		1	14	21.25	21.11	20.90	22.00
		8	0	20.09	20.09	20.11	21.00
		8	4	20.27	20.26	20.12	21.00
		8	7	20.30	20.21	20.28	21.00
		15	0	20.02	20.14	19.93	21.00

Bandwidth	Modulation	RB size	RB offset	Channel 18625	Channel 18900	Channel 19175	Tune up
5MHz	QPSK	1	0	23.08	22.97	22.99	24.00
		1	13	23.26	23.16	23.16	24.00
		1	24	23.05	23.06	22.99	24.00
		12	0	22.23	22.15	22.13	23.00
		12	6	22.27	22.28	22.18	23.00
		12	13	22.30	22.16	22.12	23.00
		25	0	22.30	22.17	22.12	23.00
	16QAM	1	0	22.64	21.92	22.23	23.00
		1	13	22.99	22.68	22.78	23.00
		1	24	22.50	21.80	22.63	23.00
		12	0	21.29	21.23	21.15	22.00
		12	6	21.45	21.36	21.31	22.00
		12	13	21.37	21.10	21.15	22.00
		25	0	21.39	21.19	21.31	22.00
	64QAM	1	0	21.54	20.79	21.16	22.00
		1	13	21.88	21.61	21.63	22.00
		1	24	21.43	20.70	21.50	22.00
		12	0	20.20	20.08	20.00	21.00
		12	6	20.32	20.26	20.26	21.00
		12	13	20.32	19.96	20.06	21.00
		25	0	20.34	20.05	20.19	21.00

Bandwidth	Modulation	RB size	RB offset	Channel 18650	Channel 18900	Channel 19150	Tune up
10MHz	QPSK	1	0	23.23	23.28	23.06	24.00
		1	25	23.35	**23.46**	23.17	24.00
		1	49	23.10	23.13	23.18	24.00
		25	0	22.42	22.30	22.22	23.00
		25	13	22.45	22.43	22.24	23.00
		25	25	22.35	22.41	22.20	23.00
		50	0	22.31	22.30	22.19	23.00
	16QAM	1	0	22.52	22.34	22.08	23.00
		1	25	22.75	22.54	22.00	23.00
		1	49	22.90	22.52	22.28	23.00
		25	0	21.42	21.30	21.39	22.00
		25	13	21.37	21.29	21.27	22.00
		25	25	21.41	21.33	21.08	22.00
		50	0	21.41	21.38	21.21	22.00
	64QAM	1	0	21.37	21.21	21.02	22.00
		1	25	21.60	21.39	20.89	22.00
		1	49	21.82	21.41	21.22	22.00
		25	0	20.37	20.22	20.34	21.00
		25	13	20.29	20.17	20.21	21.00
		25	25	20.33	20.19	19.97	21.00
		50	0	20.29	20.24	20.06	21.00

Bandwidth	Modulation	RB size	RB offset	Channel 18675	Channel 18900	Channel 19125	Tune up
15MHz	QPSK	1	0	23.13	23.11	23.02	24.00
		1	38	23.23	23.21	23.12	24.00
		1	74	23.03	23.01	23.00	24.00
		36	0	22.33	22.16	22.19	23.00
		36	18	22.28	22.21	22.23	23.00
		36	39	22.33	22.09	22.07	23.00
		75	0	22.25	22.12	22.07	23.00
	16QAM	1	0	22.42	22.45	22.67	23.00
		1	38	22.56	22.24	22.59	23.00
		1	74	22.38	22.06	22.21	23.00
		36	0	21.22	21.29	21.22	22.00
		36	18	21.34	21.24	21.16	22.00
		36	39	21.32	21.20	21.08	22.00
		75	0	21.25	21.21	21.10	22.00
	64QAM	1	0	21.28	21.33	21.52	22.00
		1	38	21.47	21.14	21.50	22.00
		1	74	21.27	20.93	21.12	22.00
		36	0	20.12	20.20	20.11	21.00
		36	18	20.21	20.19	20.09	21.00
		36	39	20.27	20.15	20.03	21.00
		75	0	20.20	20.09	20.05	21.00
Bandwidth	Modulation	RB size	RB offset	Channel 18700	Channel 18900	Channel 19100	Tune up
20MHz	QPSK	1	0	23.12	**23.25**	22.89	24.00
		1	50	23.24	23.21	23.21	24.00
		1	99	23.02	22.88	22.95	24.00
		50	0	22.19	**22.31**	22.15	23.00
		50	25	22.22	22.12	22.30	23.00
		50	50	22.17	22.08	22.00	23.00
		100	0	22.19	22.19	22.14	23.00
	16QAM	1	0	22.63	22.29	22.50	23.00
		1	50	22.60	22.37	23.00	23.00
		1	99	22.31	22.35	21.99	23.00
		50	0	21.23	21.24	21.21	22.00
		50	25	21.38	21.24	21.25	22.00
		50	50	21.31	21.21	21.12	22.00
		100	0	21.23	21.09	21.18	22.00
	64QAM	1	0	21.28	21.38	21.29	22.00
		1	50	21.69	21.47	21.58	22.00
		1	99	21.20	21.31	21.21	22.00
		50	0	20.23	20.35	20.19	21.00
		50	25	20.48	20.25	20.30	21.00
		50	50	20.25	20.15	20.15	21.00
		100	0	20.33	20.23	20.28	21.00

LTE Band 4				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 19957	Channel 20175	Channel 20393	Tune up
1.4MHz	QPSK	1	0	23.10	23.15	23.07	24.00
		1	2	23.37	23.28	23.13	24.00
		1	5	23.11	23.15	23.15	24.00
		3	0	23.21	23.20	23.13	24.00
		3	2	23.23	23.29	23.18	24.00
		3	3	23.19	23.30	23.26	24.00
		6	0	22.27	22.22	22.17	23.00
	16QAM	1	0	22.58	22.27	22.24	23.00
		1	2	22.23	22.40	22.42	23.00
		1	5	22.08	21.99	22.50	23.00
		3	0	22.24	22.23	21.98	23.00
		3	2	22.16	22.15	22.33	23.00
		3	3	22.26	22.19	22.07	23.00
		6	0	21.29	21.43	21.28	22.00
	64QAM	1	0	21.47	21.14	21.12	22.00
		1	2	21.13	21.29	21.36	22.00
		1	5	20.98	20.89	21.44	22.00
		3	0	21.14	21.11	20.92	22.00
		3	2	21.04	21.07	21.22	22.00
		3	3	21.20	21.11	20.98	22.00
		6	0	20.20	20.36	20.14	21.00
Bandwidth	Modulation	RB size	RB offset	Channel 19965	Channel 20175	Channel 20385	Tune up
3MHz	QPSK	1	0	**23.41**	23.28	23.19	24.00
		1	7	23.11	23.22	23.15	24.00
		1	14	22.19	22.22	22.08	24.00
		8	0	22.20	22.23	22.08	23.00
		8	4	22.24	22.24	22.19	23.00
		8	7	22.13	22.25	22.11	23.00
		15	0	22.42	21.96	22.12	23.00
	16QAM	1	0	22.17	22.76	22.52	23.00
		1	7	22.18	22.25	22.27	23.00
		1	14	21.16	21.48	21.33	23.00
		8	0	21.30	21.35	21.34	22.00
		8	4	21.41	21.37	21.19	22.00
		8	7	21.32	21.32	21.19	22.00
		15	0	21.20	21.06	21.31	22.00
	64QAM	1	0	21.03	21.61	21.41	22.00
		1	7	21.08	21.15	21.22	22.00
		1	14	20.01	20.41	20.23	22.00
		8	0	20.16	20.25	20.20	21.00
		8	4	20.34	20.30	20.06	21.00
		8	7	20.25	20.21	20.06	21.00
		15	0	20.15	20.04	20.19	21.00

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Bandwidth	Modulation	RB size	RB offset	Channel 19975	Channel 20175	Channel 20375	Tune up
5MHz	QPSK	1	0	23.08	23.05	23.02	24.00
		1	13	23.22	23.23	23.09	24.00
		1	24	23.19	23.10	23.04	24.00
		12	0	22.15	22.24	22.14	23.00
		12	6	22.18	22.33	22.19	23.00
		12	13	22.18	22.19	22.10	23.00
		25	0	22.17	22.22	22.15	23.00
	16QAM	1	0	22.47	22.27	22.18	23.00
		1	13	22.43	22.38	22.23	23.00
		1	24	22.48	22.19	22.10	23.00
		12	0	21.16	21.15	21.15	22.00
		12	6	21.21	21.32	21.13	22.00
		12	13	21.22	21.10	21.04	22.00
		25	0	21.28	21.32	21.27	22.00
	64QAM	1	0	21.42	21.19	21.13	22.00
		1	13	21.38	21.27	21.11	22.00
		1	24	21.43	21.12	20.95	22.00
		12	0	20.11	20.02	20.07	21.00
		12	6	20.14	20.27	20.04	21.00
		12	13	20.12	20.04	19.95	21.00
		25	0	20.14	20.26	20.18	21.00

Bandwidth	Modulation	RB size	RB offset	Channel 20000	Channel 20175	Channel 20350	Tune up
10MHz	QPSK	1	0	23.11	23.16	23.07	24.00
		1	25	23.40	23.19	23.09	24.00
		1	49	23.11	23.19	23.08	24.00
		25	0	22.26	22.16	22.28	23.00
		25	13	22.26	22.24	22.29	23.00
		25	25	22.23	22.23	22.13	23.00
		50	0	22.25	22.30	22.20	23.00
	16QAM	1	0	22.13	21.98	22.34	23.00
		1	25	22.55	22.55	22.87	23.00
		1	49	22.46	22.79	22.68	23.00
		25	0	21.30	21.25	21.36	22.00
		25	13	21.28	21.31	21.34	22.00
		25	25	21.34	21.32	21.31	22.00
		50	0	21.23	21.23	21.26	22.00
	64QAM	1	0	21.04	20.87	21.25	22.00
		1	25	21.40	21.42	21.79	22.00
		1	49	21.37	21.66	21.62	22.00
		25	0	20.19	20.13	20.23	21.00
		25	13	20.18	20.21	20.20	21.00
		25	25	20.20	20.19	20.16	21.00
		50	0	20.18	20.18	20.13	21.00

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Bandwidth	Modulation	RB size	RB offset	Channel 20025	Channel 20175	Channel 20325	Tune up
15MHz	QPSK	1	0	23.13	23.00	23.12	24.00
		1	38	23.20	23.12	23.23	24.00
		1	74	23.12	23.09	23.21	24.00
		36	0	22.14	22.15	22.31	23.00
		36	18	22.20	22.20	22.25	23.00
		36	39	22.18	22.11	22.15	23.00
		75	0	22.13	22.16	22.21	23.00
	16QAM	1	0	22.21	22.08	22.13	23.00
		1	38	22.26	22.39	22.56	23.00
		1	74	22.46	22.49	22.66	23.00
		36	0	21.25	21.11	21.18	22.00
		36	18	21.31	21.24	21.28	22.00
		36	39	21.21	21.13	21.22	22.00
		75	0	21.16	21.17	21.34	22.00
	64QAM	1	0	21.09	21.02	21.03	22.00
		1	38	21.17	21.26	21.43	22.00
		1	74	21.35	21.42	21.51	22.00
		36	0	20.15	19.96	20.09	21.00
		36	18	20.20	20.09	20.15	21.00
		36	39	20.15	20.07	20.08	21.00
		75	0	20.06	20.11	20.19	21.00
Bandwidth	Modulation	RB size	RB offset	Channel 20050	Channel 20175	Channel 20300	Tune up
20MHz	QPSK	1	0	23.03	23.00	23.01	24.00
		1	50	**23.09**	**23.11**	**23.10**	24.00
		1	99	22.99	22.97	22.88	24.00
		50	0	22.07	22.21	22.14	23.00
		50	25	22.17	22.12	**22.22**	23.00
		50	50	22.18	22.14	22.11	23.00
		100	0	**22.25**	22.20	22.13	23.00
	16QAM	1	0	22.29	22.39	22.50	23.00
		1	50	22.35	22.36	22.43	23.00
		1	99	22.48	22.15	22.53	23.00
		50	0	21.08	21.26	21.15	22.00
		50	25	21.25	21.24	21.27	22.00
		50	50	21.31	21.18	21.22	22.00
		100	0	21.14	21.12	21.26	22.00
	64QAM	1	0	21.28	21.27	21.13	22.00
		1	50	21.46	21.62	21.68	22.00
		1	99	21.38	21.41	21.10	22.00
		50	0	20.27	20.33	20.14	21.00
		50	25	20.36	20.21	20.28	21.00
		50	50	20.30	20.26	20.22	21.00
		100	0	20.26	20.23	20.28	21.00

LTE Band 5				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 20407	Channel 20525	Channel 20643	Tune up
1.4MHz	QPSK	1	0	23.18	23.18	23.08	24.00
		1	2	23.30	23.26	23.27	24.00
		1	5	23.20	23.12	23.09	24.00
		3	0	23.20	23.24	23.25	24.00
		3	2	23.26	23.23	23.21	24.00
		3	3	23.27	23.26	23.18	24.00
		6	0	22.28	22.38	22.19	23.00
	16QAM	1	0	22.34	22.27	22.06	23.00
		1	2	22.81	22.38	22.41	23.00
		1	5	22.33	21.92	22.36	23.00
		3	0	22.15	22.10	22.31	23.00
		3	2	22.23	22.46	22.19	23.00
		3	3	22.33	22.21	22.11	23.00
		6	0	21.23	21.29	21.45	22.00
	64QAM	1	0	21.26	21.15	20.95	22.00
		1	2	21.76	21.29	21.30	22.00
		1	5	21.24	20.84	21.23	22.00
		3	0	21.04	21.03	21.24	22.00
		3	2	21.15	21.38	21.10	22.00
		3	3	21.19	21.11	21.00	22.00
		6	0	20.18	20.19	20.32	21.00
Bandwidth	Modulation	RB size	RB offset	Channel 20415	Channel 20525	Channel 20635	Tune up
3MHz	QPSK	1	0	23.28	23.10	23.10	24.00
		1	7	23.25	23.16	23.24	24.00
		1	14	23.21	23.09	23.18	24.00
		8	0	22.37	22.25	22.26	23.00
		8	4	22.35	22.21	22.25	23.00
		8	7	22.17	22.21	22.23	23.00
		15	0	22.14	22.24	22.21	23.00
	16QAM	1	0	22.23	22.34	22.49	23.00
		1	7	22.46	22.77	22.06	23.00
		1	14	22.37	22.35	22.47	23.00
		8	0	21.40	21.33	21.27	22.00
		8	4	21.26	21.39	21.45	22.00
		8	7	21.49	21.29	21.25	22.00
		15	0	21.27	21.30	21.42	22.00
	64QAM	1	0	21.12	21.23	21.36	22.00
		1	7	21.36	21.62	21.92	22.00
		1	14	21.24	21.28	21.33	22.00
		8	0	20.32	20.28	20.17	21.00
		8	4	20.16	20.28	20.37	21.00
		8	7	20.43	20.21	20.16	21.00
		15	0	20.19	20.25	20.30	21.00

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Bandwidth	Modulation	RB size	RB offset	Channel 20425	Channel 20525	Channel 20625	Tune up
5MHz	QPSK	1	0	23.11	23.10	23.14	24.00
		1	13	23.25	23.26	23.17	24.00
		1	24	23.23	22.97	23.00	24.00
		12	0	22.21	22.22	22.25	23.00
		12	6	22.28	22.27	22.24	23.00
		12	13	22.25	22.25	22.31	23.00
		25	0	22.20	22.24	22.11	23.00
	16QAM	1	0	22.33	22.14	22.24	23.00
		1	13	22.06	22.05	22.26	23.00
		1	24	22.49	22.00	22.33	23.00
		12	0	21.28	21.25	21.38	22.00
		12	6	21.42	21.37	21.27	22.00
		12	13	21.26	21.13	21.40	22.00
		25	0	21.40	21.35	21.32	22.00
	64QAM	1	0	21.18	21.09	21.13	22.00
		1	13	21.93	21.97	21.18	22.00
		1	24	21.35	20.85	21.24	22.00
		12	0	20.21	20.20	20.28	21.00
		12	6	20.34	20.27	20.20	21.00
		12	13	20.14	20.00	20.30	21.00
		25	0	20.26	20.21	20.18	21.00
Bandwidth	Modulation	RB size	RB offset	Channel 20450	Channel 20525	Channel 20600	Tune up
10MHz	QPSK	1	0	23.17	23.07	23.21	24.00
		1	25	**23.33**	23.32	23.02	24.00
		1	49	23.19	23.23	23.24	24.00
		25	0	22.28	22.23	**22.30**	23.00
		25	13	22.29	22.26	22.22	23.00
		25	25	22.22	22.28	22.23	23.00
		50	0	22.24	22.24	22.14	23.00
	16QAM	1	0	22.88	22.65	22.42	23.00
		1	25	22.32	22.75	22.47	23.00
		1	49	22.82	22.62	22.43	23.00
		25	0	21.38	21.36	21.25	22.00
		25	13	21.29	21.25	21.35	22.00
		25	25	21.46	21.29	21.34	22.00
		50	0	21.38	21.34	21.26	22.00
	64QAM	1	0	21.55	21.66	21.52	22.00
		1	25	21.51	21.46	21.89	22.00
		1	49	21.57	21.33	21.59	22.00
		25	0	20.31	20.22	20.35	21.00
		25	13	20.41	20.40	20.37	21.00
		25	25	20.46	20.33	20.30	21.00
		50	0	20.36	20.34	20.35	21.00

LTE Band 7				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 20775	Channel 21100	Channel 21425	Tune up
5MHz	QPSK	1	0	22.98	22.91	23.00	24.00
		1	13	23.04	22.98	23.11	24.00
		1	24	22.85	22.84	23.01	24.00
		12	0	22.04	21.91	22.08	23.00
		12	6	22.13	21.99	22.18	23.00
		12	13	22.09	21.92	22.12	23.00
		25	0	22.14	21.84	22.11	23.00
	16QAM	1	0	22.20	21.96	22.70	23.00
		1	13	22.50	22.22	22.30	23.00
		1	24	22.22	21.98	22.30	23.00
		12	0	20.99	20.83	21.10	22.00
		12	6	21.20	21.01	21.21	22.00
		12	13	21.07	21.11	21.14	22.00
		25	0	21.07	21.08	21.25	22.00
	64QAM	1	0	21.06	20.85	21.62	22.00
		1	13	21.41	21.14	21.19	22.00
		1	24	21.15	20.86	21.23	22.00
		12	0	19.94	19.69	20.03	21.00
		12	6	20.05	19.91	20.06	21.00
		12	13	19.95	20.02	20.08	21.00
		25	0	20.01	19.97	20.13	21.00
Bandwidth	Modulation	RB size	RB offset	Channel 20800	Channel 21100	Channel 21400	Tune up
10MHz	QPSK	1	0	23.08	22.78	23.03	24.00
		1	25	23.16	23.09	23.16	24.00
		1	49	22.99	22.89	22.95	24.00
		25	0	22.08	22.03	22.13	23.00
		25	13	21.99	21.97	22.15	23.00
		25	25	22.08	22.00	22.06	23.00
		50	0	22.09	22.08	22.12	23.00
	16QAM	1	0	22.75	22.07	22.68	23.00
		1	25	21.99	22.28	22.68	23.00
		1	49	22.50	22.52	22.19	23.00
		25	0	21.11	20.97	21.21	22.00
		25	13	21.06	20.93	21.30	22.00
		25	25	21.09	21.05	21.08	22.00
		50	0	21.16	21.01	21.18	22.00
	64QAM	1	0	21.70	20.95	21.58	22.00
		1	25	20.92	21.19	21.57	22.00
		1	49	21.36	21.45	21.13	22.00
		25	0	20.06	19.82	20.15	21.00
		25	13	19.96	19.84	20.18	21.00
		25	25	20.01	19.94	19.94	21.00
		50	0	20.07	19.95	20.04	21.00

Bandwidth	Modulation	RB size	RB offset	Channel 20825	Channel 21100	Channel 21375	Tune up
15MHz	QPSK	1	0	22.92	22.80	22.86	24.00
		1	38	23.05	22.93	23.08	24.00
		1	74	22.86	22.82	22.94	24.00
		36	0	22.04	21.99	22.13	23.00
		36	18	22.09	22.00	22.05	23.00
		36	39	22.06	21.94	22.16	23.00
		75	0	22.09	21.91	22.16	23.00
	16QAM	1	0	22.43	22.46	21.74	23.00
		1	38	22.55	22.38	22.47	23.00
		1	74	22.40	21.82	22.40	23.00
		36	0	21.03	20.91	21.09	22.00
		36	18	21.06	21.02	21.17	22.00
		36	39	21.09	20.99	21.14	22.00
		75	0	21.08	20.96	21.12	22.00
	64QAM	1	0	21.32	21.40	20.66	22.00
		1	38	21.45	21.28	21.38	22.00
		1	74	21.33	20.71	21.32	22.00
		36	0	19.96	19.85	19.94	21.00
		36	18	19.98	19.94	20.08	21.00
		36	39	19.96	19.92	19.99	21.00
		75	0	19.99	19.88	20.06	21.00

Bandwidth	Modulation	RB size	RB offset	Channel 20850	Channel 21100	Channel 21350	Tune up
20MHz	QPSK	1	0	23.03	22.87	22.81	24.00
		1	50	23.15	23.03	**23.17**	24.00
		1	99	22.64	22.83	22.91	24.00
		50	0	**22.16**	22.00	22.02	23.00
		50	25	22.14	21.98	22.15	23.00
		50	50	22.00	21.94	22.04	23.00
		100	0	21.98	21.94	22.07	23.00
	16QAM	1	0	22.65	22.70	22.25	23.00
		1	50	22.81	22.24	22.41	23.00
		1	99	22.57	22.20	22.04	23.00
		50	0	21.08	20.99	21.19	22.00
		50	25	21.14	21.06	21.19	22.00
		50	50	21.05	20.93	21.16	22.00
		100	0	21.04	21.01	21.15	22.00
	64QAM	1	0	21.18	21.10	21.25	22.00
		1	50	21.25	21.37	21.64	22.00
		1	99	21.21	21.05	21.41	22.00
		50	0	20.13	20.05	20.19	21.00
		50	25	20.10	20.03	20.24	21.00
		50	50	20.03	20.06	20.23	21.00
		100	0	20.07	20.11	20.06	21.00

LTE Band 38				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 37775	Channel 38000	Channel 38225	Tune up
5MHz	QPSK	1	0	23.03	23.03	22.97	24.00
		1	13	23.09	23.10	23.09	24.00
		1	24	23.05	23.05	22.91	24.00
		12	0	22.13	22.17	22.07	23.00
		12	6	22.17	22.25	22.18	23.00
		12	13	22.19	22.17	22.03	23.00
		25	0	22.05	22.17	21.97	23.00
	16QAM	1	0	22.09	22.10	22.07	23.00
		1	13	22.26	22.17	22.18	23.00
		1	24	22.07	22.10	22.06	23.00
		12	0	21.14	21.06	21.03	22.00
		12	6	21.08	21.06	21.14	22.00
		12	13	21.05	21.05	20.97	22.00
		25	0	21.17	21.17	21.07	22.00
	64QAM	1	0	21.02	20.98	21.01	22.00
		1	13	21.20	21.06	21.13	22.00
		1	24	21.01	20.98	20.97	22.00
		12	0	20.08	19.91	19.91	21.00
		12	6	19.94	20.01	20.00	21.00
		12	13	20.00	19.98	19.84	21.00
		25	0	20.06	20.03	20.01	21.00
Bandwidth	Modulation	RB size	RB offset	Channel 37800	Channel 38000	Channel 38200	Tune up
10MHz	QPSK	1	0	23.18	23.12	23.12	24.00
		1	25	23.06	23.03	22.95	24.00
		1	49	23.08	23.12	23.04	24.00
		25	0	22.13	22.15	22.09	23.00
		25	13	22.11	22.18	22.13	23.00
		25	25	22.13	22.10	22.05	23.00
		50	0	22.22	22.17	22.14	23.00
	16QAM	1	0	22.30	22.26	22.07	23.00
		1	25	22.20	22.16	22.08	23.00
		1	49	22.19	22.10	22.12	23.00
		25	0	21.15	21.20	21.15	22.00
		25	13	21.15	21.15	21.15	22.00
		25	25	21.13	21.13	21.08	22.00
		50	0	21.32	21.31	21.19	22.00
	64QAM	1	0	21.24	21.13	20.97	22.00
		1	25	21.09	21.08	20.97	22.00
		1	49	21.14	21.01	21.07	22.00
		25	0	20.01	20.14	20.00	21.00
		25	13	20.10	20.10	20.07	21.00
		25	25	19.99	20.03	20.01	21.00
		50	0	20.23	20.24	20.08	21.00

Bandwidth	Modulation	RB size	RB offset	Channel 37825	Channel 38000	Channel 38175	Tune up
15MHz	QPSK	1	0	23.10	23.08	23.06	24.00
		1	38	23.09	23.16	23.08	24.00
		1	74	23.00	22.96	22.98	24.00
		36	0	22.20	22.16	22.11	23.00
		36	18	22.22	22.20	22.09	23.00
		36	39	22.16	22.10	22.02	23.00
		75	0	22.14	22.21	22.08	23.00
	16QAM	1	0	22.14	22.18	22.14	23.00
		1	38	22.24	22.22	22.18	23.00
		1	74	22.21	22.19	22.01	23.00
		36	0	21.20	21.14	21.14	22.00
		36	18	21.21	21.22	21.07	22.00
		36	39	21.19	21.13	21.00	22.00
		75	0	21.28	21.26	21.23	22.00
	64QAM	1	0	21.06	21.05	21.07	22.00
		1	38	21.15	21.15	21.06	22.00
		1	74	21.08	21.04	20.92	22.00
		36	0	20.15	20.02	20.06	21.00
		36	18	20.07	20.12	19.97	21.00
		36	39	20.12	19.99	19.95	21.00
		75	0	20.21	20.15	20.18	21.00
Bandwidth	Modulation	RB size	RB offset	Channel 37850	Channel 38000	Channel 38150	Tune up
20MHz	QPSK	1	0	23.06	23.00	23.06	24.00
		1	50	**23.19**	**23.19**	23.05	24.00
		1	99	22.91	22.86	22.88	24.00
		50	0	22.13	22.12	22.09	23.00
		50	25	22.16	22.17	22.13	23.00
		50	50	22.09	**22.18**	22.09	23.00
		100	0	22.04	22.14	22.12	23.00
	16QAM	1	0	22.11	22.10	22.19	23.00
		1	50	22.25	22.23	22.19	23.00
		1	99	22.10	21.94	21.97	23.00
		50	0	21.26	21.25	21.21	22.00
		50	25	21.20	21.23	21.18	22.00
		50	50	21.22	21.15	21.10	22.00
		100	0	21.18	21.19	21.18	22.00
	64QAM	1	0	20.78	20.72	20.61	22.00
		1	50	20.88	20.77	20.75	22.00
		1	99	20.51	20.56	20.47	22.00
		50	0	20.31	20.31	20.25	21.00
		50	25	20.32	20.33	20.29	21.00
		50	50	20.29	20.17	20.21	21.00
		100	0	20.24	20.22	20.24	21.00

LTE Band 41				Conducted Power(dBm)				
Bandwidth	Modulation	RB size	RB offset	Channel 40115	Channel 40432	Channel 40748	Channel 41065	Tune up
5MHz	QPSK	1	0	23.08	23.25	23.20	23.02	24.00
		1	13	23.09	23.02	22.95	22.91	24.00
		1	24	23.02	23.06	22.94	22.95	24.00
		12	0	22.21	22.13	22.13	22.03	23.00
		12	6	22.00	22.25	22.17	22.05	23.00
		12	13	22.19	22.18	22.10	22.05	23.00
		25	0	22.05	22.21	22.21	22.01	23.00
	16QAM	1	0	22.16	22.31	22.23	22.05	23.00
		1	13	22.04	22.16	22.17	22.01	23.00
		1	24	22.08	22.10	22.08	21.96	23.00
		12	0	21.13	21.23	21.07	21.00	22.00
		12	6	21.09	21.22	21.06	21.06	22.00
		12	13	21.07	21.23	21.12	21.06	22.00
		25	0	21.32	21.30	21.24	21.14	22.00
	64QAM	1	0	21.10	21.17	21.13	21.03	22.00
		1	13	21.00	21.19	21.13	20.89	22.00
		1	24	20.93	21.02	21.11	20.85	22.00
		12	0	19.99	20.14	20.04	19.94	21.00
		12	6	19.89	20.08	19.95	19.95	21.00
		12	13	20.05	20.05	20.02	19.87	21.00
		25	0	20.19	20.19	20.14	20.06	21.00
Bandwidth	Modulation	RB size	RB offset	Channel 40140	Channel 40440	Channel 40740	Channel 41040	Tune up
10MHz	QPSK	1	0	23.14	23.14	23.14	22.98	24.00
		1	25	23.05	23.12	23.04	22.88	24.00
		1	49	23.04	23.06	22.93	22.96	24.00
		25	0	22.13	22.18	22.11	22.09	23.00
		25	13	22.03	22.22	22.15	22.08	23.00
		25	25	22.14	22.24	22.06	22.03	23.00
		50	0	22.05	22.19	22.23	21.99	23.00
	16QAM	1	0	22.23	22.34	22.18	22.07	23.00
		1	25	22.04	22.19	22.14	22.03	23.00
		1	49	22.08	22.21	22.05	22.01	23.00
		25	0	21.14	21.25	21.20	21.10	22.00
		25	13	21.06	21.17	21.11	21.01	22.00
		25	25	21.15	21.18	21.04	21.06	22.00
		50	0	21.26	21.31	21.22	21.20	22.00
	64QAM	1	0	21.16	21.25	21.10	20.97	22.00
		1	25	21.05	21.09	21.06	20.92	22.00
		1	49	20.88	21.03	21.05	20.89	22.00
		25	0	20.03	20.18	20.07	19.95	21.00
		25	13	20.08	20.01	19.97	19.85	21.00
		25	25	20.06	20.10	20.01	19.94	21.00
		50	0	20.21	20.19	20.06	20.09	21.00

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Bandwidth	Modulation	RB size	RB offset	Channel 40165	Channel 40448	Channel 40732	Channel 41015	Tune up
15MHz	QPSK	1	0	23.19	23.08	23.25	22.97	24.00
		1	38	23.08	23.24	23.19	23.01	24.00
		1	74	22.98	23.05	23.05	22.97	24.00
		36	0	22.14	22.07	22.10	22.10	23.00
		36	18	22.11	22.16	22.19	22.04	23.00
		36	39	22.12	22.20	22.06	22.12	23.00
		75	0	22.10	22.27	22.16	22.17	23.00
	16QAM	1	0	22.26	22.23	22.11	22.13	23.00
		1	38	22.24	22.32	22.25	22.17	23.00
		1	74	22.05	22.16	22.13	22.09	23.00
		36	0	21.12	21.22	21.17	21.08	22.00
		36	18	21.14	21.18	21.20	21.06	22.00
		36	39	20.94	21.17	21.17	21.06	22.00
		75	0	21.22	21.24	21.26	21.17	22.00
	64QAM	1	0	21.16	21.17	21.10	21.10	22.00
		1	38	21.21	21.27	21.10	20.98	22.00
		1	74	20.94	21.06	21.02	20.98	22.00
		36	0	20.06	20.04	20.13	20.04	21.00
		36	18	20.12	19.99	20.16	19.94	21.00
		36	39	19.98	20.13	19.98	20.02	21.00
		75	0	20.17	20.17	20.15	19.93	21.00
Bandwidth	Modulation	RB size	RB offset	Channel 40190	Channel 40457	Channel 40723	Channel 40990	Tune up
20MHz	QPSK	1	0	23.06	22.99	22.96	22.87	24.00
		1	50	23.10	23.19	23.27	**23.28**	24.00
		1	99	22.88	23.01	22.88	22.82	24.00
		50	0	22.17	22.10	22.15	22.07	23.00
		50	25	22.06	22.16	22.11	22.01	23.00
		50	50	22.04	22.13	22.03	**22.18**	23.00
		100	0	21.99	22.18	22.17	22.06	23.00
	16QAM	1	0	22.06	22.03	22.00	22.11	23.00
		1	50	22.21	22.29	22.21	22.21	23.00
		1	99	22.10	22.10	21.94	21.93	23.00
		50	0	21.21	21.26	21.26	21.17	22.00
		50	25	21.22	21.25	21.18	21.12	22.00
		50	50	21.20	21.23	21.21	21.17	22.00
		100	0	21.17	21.17	21.12	21.18	22.00
	64QAM	1	0	20.77	20.72	20.74	20.70	22.00
		1	50	20.88	20.86	20.83	20.94	22.00
		1	99	20.50	20.67	20.57	20.46	22.00
		50	0	20.23	20.23	20.31	20.17	21.00
		50	25	20.26	20.31	20.34	20.23	21.00
		50	50	20.23	20.26	20.13	20.13	21.00
		100	0	20.19	20.27	20.25	20.07	21.00

Table 13：Conducted Power of LTE

8.1.2 Conducted Power of Top Antenna(Ant2)

8.1.2.1 Conducted Power of GSM

GSM 850										
Burst Output Power(dBm)					Tune up	Division Factors	Frame-Average Output Power(dBm)			Tune up
Channel		128	190	251			128	190	251	
GSM(GMSK)	GSM	**32.69**	**32.81**	**32.73**	33.50	-9.19	23.50	23.62	23.54	24.31
GPRS/ EGPRS (GMSK)	1 TX Slot	32.61	32.69	32.69	33.50	-9.19	23.42	23.50	23.50	24.31
	2 TX Slots	31.69	31.82	31.96	32.50	-6.18	25.51	25.64	25.78	26.32
	3 TX Slots	29.93	30.00	30.16	30.50	-4.42	25.51	25.58	25.74	26.08
	4 TX Slots	28.75	**28.92**	29.05	29.50	-3.17	25.58	25.75	25.88	**26.33**
EGPRS (8PSK)	1 TX Slot	26.52	26.63	26.78	27.50	-9.19	17.33	17.44	17.59	18.31
	2 TX Slots	26.13	26.33	25.74	26.50	-6.18	19.95	20.15	19.56	20.32
	3 TX Slots	23.77	23.85	24.22	24.50	-4.42	19.35	19.43	19.80	20.08
	4 TX Slots	22.30	22.49	22.92	23.50	-3.17	19.13	19.32	19.75	20.33

Table 14：Conducted Power of GSM

Note:

1）. CMU200 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

8.1.2.2 Conducted Power of WCDMA

WCDMA Band V Receiver off					
Average Conducted Power(dBm)					
Channel		4132	4182	4233	Tune up
WCDMA	12.2kbps RMC	23.88	**23.77**	23.80	24.50
	12.2kbps AMR	23.78	23.68	23.61	24.50
HSDPA	Subtest 1	22.93	22.98	22.89	24.00
	Subtest 2	22.78	22.79	22.85	24.00
	Subtest 3	22.36	22.36	22.31	23.50
	Subtest 4	22.34	22.36	22.36	23.50
HSUPA	Subtest 1	21.96	21.83	21.80	23.00
	Subtest 2	20.89	20.94	20.79	21.00
	Subtest 3	21.92	21.86	21.84	22.00
	Subtest 4	20.36	20.34	20.35	21.00
	Subtest 5	22.00	21.90	21.88	23.00
DC-HSDPA	Subtest 1	22.95	22.94	22.91	24.00
	Subtest 2	22.82	22.78	22.86	24.00
	Subtest 3	22.39	22.32	22.32	23.50
	Subtest 4	22.38	22.36	22.36	23.50
WCDMA Band V Receiver on					
Average Conducted Power(dBm)					
Channel		4132	4182	4233	Tune up
WCDMA	12.2kbps RMC	**22.84**	**22.83**	**22.80**	23.50
	12.2kbps AMR	22.81	22.83	22.76	23.50
HSDPA	Subtest 1	21.93	21.93	21.90	23.00
	Subtest 2	21.92	21.88	21.84	23.00
	Subtest 3	21.43	21.39	21.38	22.50
	Subtest 4	21.42	21.38	21.34	22.50
HSUPA	Subtest 1	20.85	20.83	20.89	22.00
	Subtest 2	19.93	19.92	19.85	20.00
	Subtest 3	20.93	20.88	20.87	21.00
	Subtest 4	19.48	19.42	19.38	20.00
	Subtest 5	20.94	20.90	20.90	22.00
DC-HSDPA	Subtest 1	21.90	21.89	21.94	23.00
	Subtest 2	21.89	21.86	21.85	23.00
	Subtest 3	21.41	21.40	21.34	22.50
	Subtest 4	21.42	21.37	21.32	22.50

Table 15：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.

8.1.2.3 Conducted Power of LTE

LTE Band 5 Receiver off				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 20407	Channel 20525	Channel 20643	Tune up
1.4MHz	QPSK	1	0	22.95	23.11	23.12	24.00
		1	2	23.15	23.30	23.26	24.00
		1	5	22.94	23.06	22.97	24.00
		3	0	23.19	23.18	23.28	24.00
		3	2	23.30	23.29	23.13	24.00
		3	3	23.09	23.21	23.19	24.00
		6	0	22.08	22.13	22.23	23.00
	16QAM	1	0	22.51	22.82	22.40	23.00
		1	2	22.19	21.99	22.61	23.00
		1	5	22.20	22.84	22.33	23.00
		3	0	22.10	22.21	22.16	23.00
		3	2	22.22	22.07	22.14	23.00
		3	3	22.01	22.12	22.22	23.00
		6	0	21.33	21.29	21.24	22.00
	64QAM	1	0	21.45	21.76	21.33	22.00
		1	2	21.07	20.91	21.51	22.00
		1	5	21.14	21.69	21.23	22.00
		3	0	20.99	21.06	21.01	22.00
		3	2	21.11	20.91	21.02	22.00
		3	3	20.92	20.96	21.10	22.00
		6	0	20.22	20.21	20.08	21.00
Bandwidth	Modulation	RB size	RB offset	Channel 20415	Channel 20525	Channel 20635	Tune up
3MHz	QPSK	1	0	23.08	23.08	23.01	24.00
		1	7	23.30	23.29	23.27	24.00
		1	14	23.13	23.18	23.09	24.00
		8	0	22.20	22.19	22.30	23.00
		8	4	22.20	22.15	22.24	23.00
		8	7	22.18	22.14	22.24	23.00
		15	0	22.15	22.10	22.18	23.00
	16QAM	1	0	22.28	22.34	22.25	23.00
		1	7	22.66	22.66	22.58	23.00
		1	14	22.33	22.08	22.36	23.00
		8	0	21.22	21.35	21.23	22.00
		8	4	21.30	21.29	21.37	22.00
		8	7	21.36	21.26	21.29	22.00
		15	0	21.33	21.18	21.28	22.00
	64QAM	1	0	21.12	21.25	21.10	22.00
		1	7	21.55	21.58	21.46	22.00
		1	14	21.25	21.02	21.22	22.00
		8	0	20.15	20.21	20.16	21.00
		8	4	20.20	20.15	20.21	21.00
		8	7	20.30	20.13	20.14	21.00
		15	0	20.20	20.07	20.20	21.00

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Bandwidth	Modulation	RB size	RB offset	Channel 20425	Channel 20525	Channel 20625	Tune up
5MHz	QPSK	1	0	22.90	22.96	23.02	24.00
		1	13	23.27	23.17	23.15	24.00
		1	24	23.00	22.96	23.08	24.00
		12	0	22.15	22.19	22.24	23.00
		12	6	22.25	22.31	22.28	23.00
		12	13	22.16	22.17	22.23	23.00
		25	0	22.09	22.06	22.11	23.00
	16QAM	1	0	22.13	22.49	22.27	23.00
		1	13	22.79	22.49	22.28	23.00
		1	24	22.55	22.23	21.90	23.00
		12	0	21.18	21.17	21.28	22.00
		12	6	21.21	21.19	21.44	22.00
		12	13	21.25	21.17	21.31	22.00
		25	0	21.25	21.26	21.09	22.00
	64QAM	1	0	21.00	21.40	21.17	22.00
		1	13	21.70	21.35	21.22	22.00
		1	24	21.40	21.07	20.77	22.00
		12	0	20.08	20.01	20.13	21.00
		12	6	20.05	20.10	20.30	21.00
		12	13	20.09	20.03	20.16	21.00
		25	0	20.09	20.12	20.03	21.00

Bandwidth	Modulation	RB size	RB offset	Channel 20450	Channel 20525	Channel 20600	Tune up
10MHz	QPSK	1	0	23.17	23.13	23.22	24.00
		1	25	23.29	**23.31**	23.24	24.00
		1	49	23.01	23.10	22.97	24.00
		25	0	22.21	22.19	22.18	23.00
		25	13	22.17	22.19	22.21	23.00
		25	25	22.23	**22.24**	22.19	23.00
		50	0	22.23	22.19	22.26	23.00
	16QAM	1	0	22.36	22.10	22.72	23.00
		1	25	22.51	22.90	22.69	23.00
		1	49	22.74	22.87	22.26	23.00
		25	0	21.31	21.29	21.24	22.00
		25	13	21.31	21.31	21.25	22.00
		25	25	21.12	21.35	21.21	22.00
		50	0	21.32	21.28	21.23	22.00
	64QAM	1	0	21.43	21.22	21.39	22.00
		1	25	21.17	21.54	21.62	22.00
		1	49	21.30	21.37	21.38	22.00
		25	0	20.31	20.30	20.30	21.00
		25	13	20.20	20.24	20.29	21.00
		25	25	20.28	20.23	20.25	21.00
		50	0	20.30	20.28	20.25	21.00

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LTE Band 5 Receiver on				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 20407	Channel 20525	Channel 20643	Tune up
1.4MHz	QPSK	1	0	21.08	21.05	21.09	22.50
		1	2	21.26	21.27	21.19	22.50
		1	5	21.19	21.20	21.20	22.50
		3	0	21.20	21.25	21.23	22.50
		3	2	21.32	21.37	21.17	22.50
		3	3	21.16	21.16	21.19	22.50
		6	0	21.21	21.20	21.24	22.50
	16QAM	1	0	21.28	21.24	21.81	22.50
		1	2	21.51	21.36	21.44	22.50
		1	5	21.82	21.21	21.65	22.50
		3	0	21.25	21.59	21.19	22.50
		3	2	21.32	21.30	21.34	22.50
		3	3	21.09	21.19	21.06	22.50
		6	0	20.95	20.71	20.58	21.50
	64QAM	1	0	20.60	21.07	20.81	21.50
		1	2	20.74	21.05	21.04	21.50
		1	5	20.88	20.92	20.96	21.50
		3	0	20.77	20.69	20.76	21.50
		3	2	20.62	20.70	20.87	21.50
		3	3	20.70	20.74	20.83	21.50
		6	0	19.78	19.72	19.79	20.50
Bandwidth	Modulation	RB size	RB offset	Channel 20415	Channel 20525	Channel 20635	Tune up
3MHz	QPSK	1	0	21.16	21.23	21.26	22.50
		1	7	21.25	21.23	21.32	22.50
		1	14	21.25	21.18	21.19	22.50
		8	0	21.21	21.20	21.20	22.50
		8	4	21.26	21.17	21.17	22.50
		8	7	21.21	21.29	21.12	22.50
		15	0	21.16	21.21	21.25	22.50
	16QAM	1	0	21.43	21.67	21.45	22.50
		1	7	21.49	21.42	21.45	22.50
		1	14	21.56	21.45	21.23	22.50
		8	0	20.83	20.82	20.91	21.50
		8	4	20.82	20.82	20.88	21.50
		8	7	20.76	20.79	20.90	21.50
		15	0	20.70	20.74	20.83	21.50
	64QAM	1	0	20.59	21.02	20.81	21.50
		1	7	20.79	21.02	21.00	21.50
		1	14	20.89	20.88	20.98	21.50
		8	0	19.80	19.70	19.78	20.50
		8	4	19.61	19.75	19.82	20.50
		8	7	19.74	19.73	19.86	20.50
		15	0	19.73	19.70	19.76	20.50

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Bandwidth	Modulation	RB size	RB offset	Channel 20425	Channel 20525	Channel 20625	Tune up
5MHz	QPSK	1	0	21.04	20.98	21.13	22.50
		1	13	21.33	21.30	21.28	22.50
		1	24	21.14	20.97	21.02	22.50
		12	0	21.09	21.63	21.17	22.50
		12	6	21.26	21.18	21.18	22.50
		12	13	21.22	21.22	21.24	22.50
		25	0	21.21	21.15	21.13	22.50
	16QAM	1	0	21.57	21.60	20.87	22.50
		1	13	21.21	21.26	21.56	22.50
		1	24	21.13	21.48	21.14	22.50
		12	0	20.51	20.64	20.67	21.50
		12	6	20.80	20.79	20.79	21.50
		12	13	20.69	20.74	20.65	21.50
		25	0	20.78	20.63	20.65	21.50
	64QAM	1	0	20.63	20.98	20.79	21.50
		1	13	20.75	21.03	20.96	21.50
		1	24	20.93	20.91	20.93	21.50
		12	0	19.75	19.71	19.79	20.50
		12	6	19.61	19.72	19.79	20.50
		12	13	19.69	19.68	19.84	20.50
		25	0	19.76	19.67	19.79	20.50
Bandwidth	Modulation	RB size	RB offset	Channel 20450	Channel 20525	Channel 20600	Tune up
10MHz	QPSK	1	0	21.15	21.10	**21.70**	22.50
		1	25	21.30	21.34	21.29	22.50
		1	49	21.11	21.10	21.02	22.50
		25	0	**21.34**	**21.69**	**21.27**	22.50
		25	13	21.18	21.15	21.20	22.50
		25	25	21.27	21.22	21.24	22.50
		50	0	**21.25**	21.22	21.20	22.50
	16QAM	1	0	**21.84**	21.32	21.16	22.50
		1	25	21.46	21.34	21.50	22.50
		1	49	21.24	21.31	21.69	22.50
		25	0	20.78	20.75	20.77	21.50
		25	13	20.75	20.76	20.80	21.50
		25	25	20.72	20.66	20.70	21.50
		50	0	20.82	20.78	20.69	21.50
	64QAM	1	0	20.68	20.94	20.84	21.50
		1	25	20.80	20.98	21.00	21.50
		1	49	20.92	20.94	20.93	21.50
		25	0	19.80	19.70	19.77	20.50
		25	13	19.66	19.68	19.83	20.50
		25	25	19.69	19.72	19.81	20.50
		50	0	19.81	19.68	19.74	20.50

Table 16： Conducted Power of LTE

8.1.3 Conducted Power of Uplink & Downlink LTE CA

8.1.3.1 Conducted Power of uplink LTE CA

- Uplink LTE CA Conducted Power of Ant1

Combination	Modulation	PCC						SCC					Full power	
		Band	BW (MHz)	UL Channel	UL# RB	UL RB Offset	DL Channel	Band	BW (MHz)	UL Channel	UL# RB	UL RB Offset	Power	Tune-up(dBm)
CA_7C	QPSK	7	20	20850	1	99	2850	7	20	21048	1	0	22.79	24.00
CA_7C	QPSK	7	20	21100	1	99	3100	7	20	21298	1	0	23.06	24.00
CA_7C	QPSK	7	20	21100	1	0	3100	7	20	20902	1	99	22.88	24.00
CA_7C	QPSK	7	20	21350	1	0	3350	7	20	21152	1	99	23.10	24.00
Combination	Modulation	PCC						SCC					Full power	
		Band	BW (MHz)	UL Channel	UL# RB	UL RB Offset	DL Channel	Band	BW (MHz)	UL Channel	UL# RB	UL RB Offset	Power	Tune-up(dBm)
CA_38C	QPSK	38	20	37850	1	99	37850	38	20	38048	1	0	23.09	24.00
CA_38C	QPSK	38	20	37901	1	99	37901	38	20	38099	1	0	23.11	24.00
CA_38C	QPSK	38	20	38099	1	0	38099	38	20	37901	1	99	23.00	24.00
CA_38C	QPSK	38	20	38150	1	0	38150	38	20	37952	1	99	23.21	24.00

Table 17：Conducted Power of uplink LTE CA

8.1.3.2 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 that require power measurements are highlighted in the table as below:

1 band / 2CC
CA_7C
CA_38C

- Downlink LTE CA Conducted Power of Ant1

Bottom Antenna														
DL LTE CA Class	PCC							SCC1				Power(dBm)		
	LTE Band	BW (MHz)	Modulation	UL Freq. (MHz)	UL Channel	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	DL LTE CA Tx.Power	LTE Rel 8 Tx.Power	Tune-up
CA_7C	Band 7	20M	QPSK	2560	21350	1	50	Band 7	20M	2660.2	3152	23.11	23.17	24.00
CA_38C	Band 38	20M	QPSK	2580	37850	1	50	Band 38	20M	2599.8	38048	23.14	23.19	24.00

Table 18：Conducted Power of Downlink LTE CA

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.

8.1.4 Conducted Power of WIFI and BT

Mode	Antenna	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)	SAR Test
802.11b	Ant0	1	2412	1	17.50	**16.89**	Yes
		6	2437		17.50	16.49	NO
		11	2462		17.50	16.67	NO
802.11g	Ant0	1	2412	6	17.00	15.90	NO
		6	2437		17.00	15.74	NO
		11	2462		17.00	15.89	NO
802.11n HT20	Ant0	1	2412	6.5	14.50	13.56	NO
		6	2437		14.50	13.25	NO
		11	2462		14.50	13.39	NO

5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)	SAR Test
802.11a	U-NII-1	36	5180	6	15.00	**14.06**	Yes
		40	5200		15.00	14.00	NO
		44	5220		15.00	13.99	NO
		48	5240		15.00	14.04	NO
	U-NII-2A	52	5260		15.00	**14.11**	Yes
		56	5280		15.00	13.65	NO
		60	5300		15.00	14.05	NO
		64	5320		15.00	13.59	NO
	U-NII-2C	100	5500		15.00	**13.92**	Yes
		104	5520		15.00	13.84	NO
		108	5540		15.00	13.86	NO
		112	5560		15.00	13.85	NO
		116	5580		15.00	13.81	NO
		120	5600		15.00	13.86	NO
		124	5620		15.00	13.82	NO
		128	5640		15.00	13.76	NO
		132	5660		15.00	13.82	NO
		136	5680		15.00	13.91	NO
		140	5700		15.00	13.88	NO
		144	5720		15.00	13.84	NO
	U-NII-3	149	5745		15.00	13.82	NO
		153	5765		15.00	13.52	NO
		157	5785		15.00	**13.93**	Yes
		161	5805		15.00	13.66	NO
		165	5825		15.00	13.82	NO

5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)	SAR Test
802.11n-HT20	U-NII-1	36	5180	MCS0	15.00	13.72	NO
		40	5200		15.00	13.85	NO
		44	5220		15.00	13.78	NO
		48	5240		15.00	13.74	NO
	U-NII-2A	52	5260		15.00	13.44	NO
		56	5280		15.00	13.48	NO
		60	5300		15.00	13.93	NO
		64	5320		15.00	13.83	NO
	U-NII-2C	100	5500		15.00	13.10	NO
		104	5520		15.00	13.08	NO
		108	5540		15.00	13.06	NO
		112	5560		15.00	13.01	NO
		116	5580		15.00	13.13	NO
		120	5600		15.00	13.09	NO
		124	5620		15.00	13.11	NO
		128	5640		15.00	13.15	NO
		132	5660		15.00	13.05	NO
		136	5680		15.00	13.05	NO
		140	5700		15.00	13.11	NO
		144	5720		15.00	13.12	NO
	U-NII-3	149	5745		15.00	13.18	NO
		153	5765		15.00	13.25	NO
		157	5785		15.00	13.36	NO
		161	5805		15.00	13.16	NO
		165	5825		15.00	13.22	NO

5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)	SAR Test
802.11n-HT40	U-NII-1	38	5190	MCS0	14.50	13.40	NO
		46	5230		14.50	13.42	NO
	U-NII-2A	54	5270		14.50	13.40	NO
		62	5310		14.50	13.24	NO
	U-NII-2C	102	5510		14.50	12.62	NO
		110	5550		14.50	12.53	NO
		118	5590		14.50	12.70	NO
		126	5630		14.50	12.58	NO
		134	5670		14.50	12.75	NO
		142	5710		14.50	12.54	NO
	U-NII-3	151	5755		14.50	12.79	NO
		159	5795		14.50	12.67	NO

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5GHz	Mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)	SAR Test
802.11ac 20M	U-NII-1	36	5180	MCS0	15.00	13.76	NO
		40	5200		15.00	13.74	NO
		44	5220		15.00	13.59	NO
		48	5240		15.00	13.75	NO
	U-NII-2A	52	5260		15.00	13.41	NO
		56	5280		15.00	13.37	NO
		60	5300		15.00	13.76	NO
		64	5320		15.00	13.35	NO
	U-NII-2C	100	5500		15.00	13.02	NO
		104	5520		15.00	13.06	NO
		108	5540		15.00	13.02	NO
		112	5560		15.00	13.53	NO
		116	5580		15.00	13.03	NO
		120	5600		15.00	13.16	NO
		124	5620		15.00	13.17	NO
		128	5640		15.00	13.09	NO
		132	5660		15.00	13.00	NO
		136	5680		15.00	13.06	NO
		140	5700		15.00	13.11	NO
		144	5720		15.00	13.11	NO
	U-NII-3	149	5745		15.00	13.20	NO
		153	5765		15.00	13.22	NO
		157	5785		15.00	13.19	NO
		161	5805		15.00	13.33	NO
		165	5825		15.00	13.03	NO

5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)	SAR Test
802.11ac 40M	U-NII-1	38	5190	MCS0	14.50	13.22	NO
		46	5230		14.50	13.37	NO
	U-NII-2A	54	5270		14.50	13.41	NO
		62	5310		14.50	13.36	NO
	U-NII-2C	102	5510		14.50	12.64	NO
		110	5550		14.50	12.51	NO
		118	5590		14.50	12.58	NO
		126	5630		14.50	12.59	NO
		134	5670		14.50	12.55	NO
		142	5710		14.50	12.75	NO
	U-NII-3	151	5755		14.50	12.56	NO
		159	5795		14.50	12.85	NO

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5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)	SAR Test
802.11ac 80M	U-NII-1	42	5210	MCS0	14.00	13.70	NO
	U-NII-2A	58	5290		14.00	13.78	NO
	U-NII-2C	106	5530		14.00	12.87	NO
		122	5610		14.00	12.86	NO
		138	5690		14.00	12.79	NO
	U-NII-3	155	5775		14.00	13.03	NO

Table 19：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.

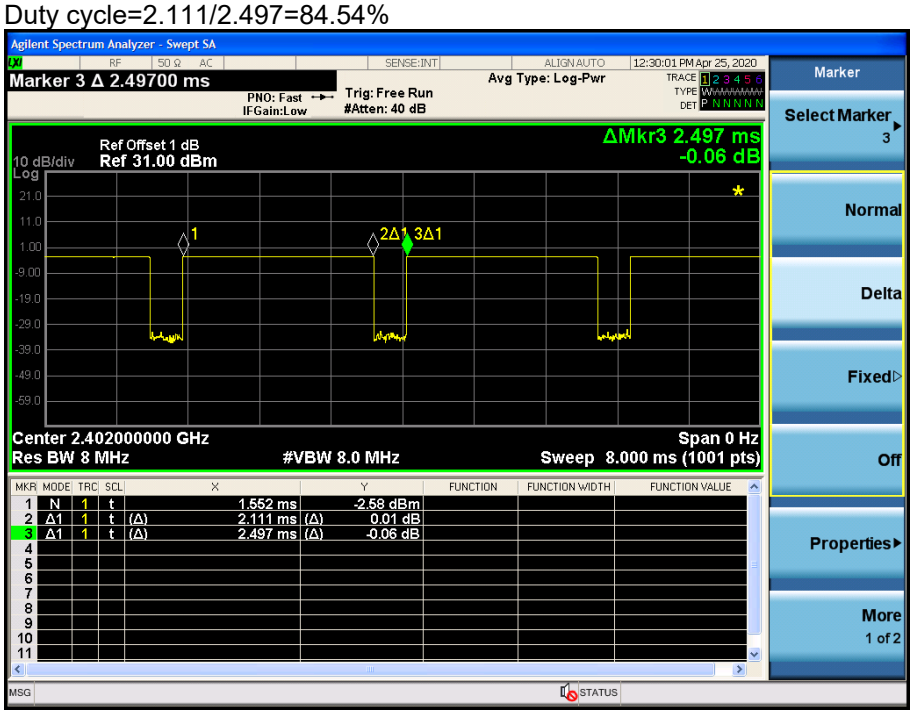
c) For each transmission mode configuration, power must be measured for the highest and lowest channels; and at the mid-band channel(s) when there are at least 3 channels. For configurations with multiple mid-band channels, due to an even number of channels, both channels should be measured.

BT			Tune up (dBm)	Average Conducted Power(dBm)
Modulation	Channel	Frequency(MHz)		
DH5 (GFSK)	0	2402	11.00	9.26
	39	2441	11.00	**9.70**
	78	2480	11.00	9.35
2DH5 (π/4DQPSK)	0	2402	7.00	5.82
	39	2441	7.00	6.31
	78	2480	7.00	6.14
3DH5 (8DPSK)	0	2402	7.00	5.76
	39	2441	7.00	6.24
	78	2480	7.00	6.05
BLE(1M)			Tune up (dBm)	Average Conducted Power(dBm)
Modulation	Channel	Frequency(MHz)		
GFSK	0	2402	-1.00	-2.78
	19	2440	-1.00	-1.66
	39	2480	-1.00	-2.69
BLE(2M)			Tune up (dBm)	Average Conducted Power(dBm)
Modulation	Channel	Frequency(MHz)		
GFSK	0	2402	-1.00	-2.98
	19	2440	-1.00	-1.73
	39	2480	-1.00	-2.91

Table 20：Conducted Power of BT

Bluetooth DH5(GFSK):

Duty cycle=2.111/2.497=84.54%



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	2.62	Head	17.50	56.23	0	18.2	3	N
		Body-worn	17.50	56.23	10	9.1	3	N
		hotspot	17.50	56.23	10	9.1	3	N
Wi-Fi	5.825	Head	15.00	31.62	0	15.3	3	N
		Body-worn	15.00	31.62	10	7.6	3	N
		hotspot	15.00	31.62	10	7.6	3	N
Bluetooth	2.48	Head	11.00	12.59	0	4.0	3	N
		Body-worn	11.00	12.59	10	2.0	3	Y
		hotspot	11.00	12.59	10	2.0	3	Y

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

Ant 1 Test Record										
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 1-g (W/kg)	Liquid Temp. (℃)
Head Test Data										
Left cheek	GSM	190/836.6	1:8.3	0.046	0.14	32.51	33.50	1.256	0.058	22.0
Left tilted	GSM	190/836.6	1:8.3	0.024	0.16	32.51	33.50	1.256	0.030	22.0
Right cheek	GSM	190/836.6	1:8.3	0.052	0.08	32.51	33.50	1.256	**0.065**	22.0
Right tilted	GSM	190/836.6	1:8.3	0.027	0.03	32.51	33.50	1.256	0.034	22.0
Body worn Test data(Separate 10mm)										
Front side	GSM	190/836.6	1:8.3	0.038	-0.04	32.51	33.50	1.256	0.048	22.0
Back side	GSM	190/836.6	1:8.3	0.108	-0.03	32.51	33.50	1.256	**0.136**	22.0
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.062	0.06	28.77	29.50	1.183	0.073	22.0
Back side	GPRS 4TS	190/836.6	1:2.075	0.159	0.08	28.77	29.50	1.183	**0.188**	22.0
Left side	GPRS 4TS	190/836.6	1:2.075	0.057	-0.03	28.77	29.50	1.183	0.067	22.0
Right side	GPRS 4TS	190/836.6	1:2.075	0.062	0.10	28.77	29.50	1.183	0.073	22.0
Bottom side	GPRS 4TS	190/836.6	1:2.075	0.073	0.16	28.77	29.50	1.183	0.086	22.0
Ant 2 Test Record										
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 1-g (W/kg)	Liquid Temp. (℃)
Head Test Data										
Left cheek	GSM	190/836.6	1:8.3	0.623	0.04	32.81	33.50	1.172	0.730	22.0
Left tilted	GSM	190/836.6	1:8.3	0.521	0.05	32.81	33.50	1.172	0.611	22.0
Right cheek	GSM	190/836.6	1:8.3	0.779	-0.11	32.81	33.50	1.172	**0.913**	22.0
Right cheek	GSM	128/824.2	1:8.3	0.722	-0.02	32.69	33.50	1.205	0.870	22.0
Right cheek	GSM	251/848.8	1:8.3	0.718	0.02	32.73	33.50	1.194	0.857	22.0
Right tilted	GSM	190/836.6	1:8.3	0.732	0.03	32.81	33.50	1.172	0.858	22.0
Right tilted	GSM	128/824.2	1:8.3	0.666	0.17	32.69	33.50	1.205	0.803	22.0
Right tilted	GSM	251/848.8	1:8.3	0.706	0.06	32.73	33.50	1.194	0.843	22.0
Body worn Test data(Separate 10mm)										
Front side	GSM	190/836.6	1:8.3	0.107	0.05	32.81	33.50	1.172	0.125	22.0
Back side	GSM	190/836.6	1:8.3	0.376	-0.05	32.81	33.50	1.172	**0.441**	22.0
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.235	0.06	28.92	29.50	1.143	0.269	22.0
Back side	GPRS 4TS	190/836.6	1:2.075	0.542	-0.05	28.92	29.50	1.143	**0.619**	22.0
Left side	GPRS 4TS	190/836.6	1:2.075	0.096	-0.04	28.92	29.50	1.143	0.110	22.0
Top side	GPRS 4TS	190/836.6	1:2.075	0.226	0.19	28.92	29.50	1.143	0.258	22.0

Table 21：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).

8.3.2 SAR Result of GSM1900

Ant 1 Test Record										
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 1-g (W/kg)	Liquid Temp. (℃)
Head Test Data										
Left cheek	GSM	661/1880	1:8.3	0.048	0.07	29.75	30.50	1.189	0.057	22.1
Left tilted	GSM	661/1880	1:8.3	0.045	-0.19	29.75	30.50	1.189	0.053	22.1
Right cheek	GSM	661/1880	1:8.3	0.064	0.17	29.75	30.50	1.189	**0.075**	22.1
Right tilted	GSM	661/1880	1:8.3	0.036	0.09	29.75	30.50	1.189	0.043	22.1
Body worn Test data(Separate 10mm)										
Front side	GSM	661/1880	1:8.3	0.100	0.06	29.75	30.50	1.189	0.119	22.1
Back side	GSM	661/1880	1:8.3	0.302	0.09	29.75	30.50	1.189	**0.359**	22.1
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.190	0.18	26.00	26.50	1.122	0.213	22.1
Back side	GPRS 4TS	661/1880	1:2.075	0.509	-0.02	26.00	26.50	1.122	0.571	22.1
Left side	GPRS 4TS	661/1880	1:2.075	0.111	-0.12	26.00	26.50	1.122	0.125	22.1
Right side	GPRS 4TS	661/1880	1:2.075	0.071	-0.11	26.00	26.50	1.122	0.080	22.1
Bottom side	GPRS 4TS	661/1880	1:2.075	0.792	-0.08	26.00	26.50	1.122	**0.889**	22.1
Bottom side	GPRS 4TS	128/824.2	1:2.075	0.768	0.07	26.05	26.50	1.109	0.852	22.1
Bottom side	GPRS 4TS	251/848.8	1:2.075	0.771	0.05	26.15	26.50	1.084	0.836	22.1

Table 22：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).

8.3.3 SAR Result of WCDMA Band II

Ant 1 Test Record										
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 1-g (W/kg)	Liquid Temp. (℃)
Head Test Data										
Left cheek	RMC	9400/1880	1:1	0.096	0.02	23.62	24.50	1.225	0.118	22.1
Left tilted	RMC	9400/1880	1:1	0.109	0.05	23.62	24.50	1.225	**0.133**	22.1
Right cheek	RMC	9400/1880	1:1	0.089	0.06	23.62	24.50	1.225	0.109	22.1
Right tilted	RMC	9400/1880	1:1	0.062	0.05	23.62	24.50	1.225	0.076	22.1
Hotspot Test data(Separate 10mm) sensor on										
Back side	RMC	9400/1880	1:1	0.695	0.08	22.62	23.50	1.225	**0.851**	22.1
Back side	RMC	9262/1852.4	1:1	0.654	0.02	22.51	23.50	1.256	0.821	22.1
Back side	RMC	9538/1907.6	1:1	0.664	0.04	22.53	23.50	1.250	0.830	22.1
Bottom side	RMC	9400/1880	1:1	0.649	-0.01	22.62	23.50	1.225	0.795	22.1
Hotspot Test data sensor off										
Front side-10mm	RMC	9400/1880	1:1	0.263	-0.11	23.62	24.50	1.225	0.322	22.1
Back side-15mm	RMC	9400/1880	1:1	0.331	0.13	23.62	24.50	1.225	0.405	22.1
Left side-10mm	RMC	9400/1880	1:1	0.146	0.08	23.62	24.50	1.225	0.179	22.1
Right side-10mm	RMC	9400/1880	1:1	0.095	0.07	23.62	24.50	1.225	0.116	22.1
Bottom side-15mm	RMC	9400/1880	1:1	0.456	-0.08	23.62	24.50	1.225	0.558	22.1

Table 23：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).

8.3.4 SAR Result of WCDMA Band IV

Ant 1 Test Record										
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 1-g (W/kg)	Liquid Temp. (℃)
Head Test Data										
Left cheek	RMC	1412/1732.4	1:1	0.081	0.03	23.91	24.50	1.146	**0.093**	21.7
Left tilted	RMC	1412/1732.4	1:1	0.076	0.02	23.91	24.50	1.146	0.087	21.7
Right cheek	RMC	1412/1732.4	1:1	0.070	0.10	23.91	24.50	1.146	0.081	21.7
Right tilted	RMC	1412/1732.4	1:1	0.052	0.03	23.91	24.50	1.146	0.060	21.7
Hotspot Test data(Separate 10mm)										
Front side	RMC	1412/1732.4	1:1	0.222	0.02	23.91	24.50	1.146	0.254	21.7
Back side	RMC	1412/1732.4	1:1	0.830	0.08	23.91	24.50	1.146	0.951	21.7
Back side	RMC	1312/1712.4	1:1	0.825	0.01	23.74	24.50	1.191	0.983	21.7
Back side	RMC	1513/1752.6	1:1	0.872	0.07	23.91	24.50	1.146	**0.999**	21.7
Back side-repeated	RMC	1513/1752.6	1:1	0.868	0.12	23.91	24.50	1.146	0.994	21.7
Left side	RMC	1412/1732.4	1:1	0.107	0.11	23.91	24.50	1.146	0.123	21.7
Right side	RMC	1412/1732.4	1:1	0.078	-0.10	23.91	24.50	1.146	0.089	21.7
Bottom side	RMC	1412/1732.4	1:1	0.693	-0.01	23.91	24.50	1.146	0.794	21.7

Table 24：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).

Test Position	Channel/Frequency (MHz)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	3rd Repeated SAR (1g)
Back Side	1513/1752.6	0.872	0.868	1.005	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						

Table 25：SAR Measurement Variability Results

8.3.5 SAR Result of WCDMA Band V

Ant 1 Test Record										
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 1-g (W/kg)	Liquid Temp. (℃)
Head Test Data										
Left cheek	RMC	4182/836.4	1:1	0.076	0.07	23.83	24.50	1.167	0.088	22.0
Left tilted	RMC	4182/836.4	1:1	0.027	0.02	23.83	24.50	1.167	0.032	22.0
Right cheek	RMC	4182/836.4	1:1	0.085	0.04	23.83	24.50	1.167	**0.099**	22.0
Right tilted	RMC	4182/836.4	1:1	0.035	0.02	23.83	24.50	1.167	0.041	22.0
Hotspot Test data(Separate 10mm)										
Front side	RMC	4182/836.4	1:1	0.065	0.12	23.83	24.50	1.167	0.076	22.0
Back side	RMC	4182/836.4	1:1	0.164	0.07	23.83	24.50	1.167	**0.191**	22.0
Left side	RMC	4182/836.4	1:1	0.051	-0.06	23.83	24.50	1.167	0.060	22.0
Right side	RMC	4182/836.4	1:1	0.074	-0.11	23.83	24.50	1.167	0.086	22.0
Bottom side	RMC	4182/836.4	1:1	0.063	0.05	23.83	24.50	1.167	0.074	22.0
Ant 2 Test Record										
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 1-g (W/kg)	Liquid Temp. (℃)
Head Test Data										
Left cheek	RMC	4182/836.4	1:1	0.520	-0.04	22.83	23.50	1.167	0.607	22.0
Left tilted	RMC	4182/836.4	1:1	0.441	0.03	22.83	23.50	1.167	0.515	22.0
Right cheek	RMC	4182/836.4	1:1	0.761	-0.04	22.83	23.50	1.167	**0.888**	22.0
Right cheek	RMC	4132/826.4	1:1	0.728	0.16	22.84	23.50	1.164	0.847	22.0
Right cheek	RMC	4233/846.6	1:1	0.732	0.03	22.80	23.50	1.175	0.860	22.0
Right tilted	RMC	4182/836.4	1:1	0.566	0.05	22.83	23.50	1.167	0.660	22.0
Hotspot Test data(Separate 10mm)										
Front side	RMC	4182/836.4	1:1	0.208	0.05	23.77	24.50	1.183	0.246	22.0
Back side	RMC	4182/836.4	1:1	0.402	0.01	23.77	24.50	1.183	**0.476**	22.0
Left side	RMC	4182/836.4	1:1	0.084	-0.06	23.77	24.50	1.183	0.099	22.0
Top side	RMC	4182/836.4	1:1	0.158	-0.13	23.77	24.50	1.183	0.187	22.0

Table 26：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).

8.3.6 SAR Result of LTE Band 2

Ant 1 Test Record												
Test position	BW.	Modulation	RB Size_RB offset	Test ch./Freq.	Duty Cycle	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(1RB)												
Left cheek	20	QPSK	1_0	18900/1880	1:1	0.077	0.00	23.25	24.00	1.189	0.091	22.1
Left tilted	20	QPSK	1_0	18900/1880	1:1	0.066	0.14	23.25	24.00	1.189	0.078	22.1
Right cheek	20	QPSK	1_0	18900/1880	1:1	0.116	0.05	23.25	24.00	1.189	**0.138**	22.1
Right tilted	20	QPSK	1_0	18900/1880	1:1	0.047	0.02	23.25	24.00	1.189	0.056	22.1
Head Test Data(50%RB)												
Left cheek	20	QPSK	50_0	18900/1880	1:1	0.063	0.01	22.31	23.00	1.172	0.074	22.1
Left tilted	20	QPSK	50_0	18900/1880	1:1	0.050	0.00	22.31	23.00	1.172	0.058	22.1
Right cheek	20	QPSK	50_0	18900/1880	1:1	0.085	0.01	22.31	23.00	1.172	0.100	22.1
Right tilted	20	QPSK	50_0	18900/1880	1:1	0.032	0.07	22.31	23.00	1.172	0.037	22.1
Hotspot Test data(Separate 10mm 1RB)												
Front side	20	QPSK	1_50	18900/1880	1:1	0.212	0.18	23.25	24.00	1.189	0.252	22.1
Back side	20	QPSK	1_50	18900/1880	1:1	0.553	-0.08	23.25	24.00	1.189	**0.657**	22.1
Left side	20	QPSK	1_50	18900/1880	1:1	0.120	0.14	23.25	24.00	1.189	0.143	22.1
Right side	20	QPSK	1_50	18900/1880	1:1	0.080	-0.07	23.25	24.00	1.189	0.095	22.1
Bottom side	20	QPSK	1_50	18900/1880	1:1	0.669	0.00	23.25	24.00	1.189	**0.795**	22.1
Hotspot Test data(Separate 10mm 50%RB)												
Front side	20	QPSK	50_0	18900/1880	1:1	0.182	0.14	22.31	23.00	1.172	0.213	22.1
Back side	20	QPSK	50_0	18900/1880	1:1	0.475	-0.07	22.31	23.00	1.172	0.557	22.1
Left side	20	QPSK	50_0	18900/1880	1:1	0.101	0.06	22.31	23.00	1.172	0.118	22.1
Right side	20	QPSK	50_0	18900/1880	1:1	0.067	0.02	22.31	23.00	1.172	0.079	22.1
Bottom side	20	QPSK	50_0	18900/1880	1:1	0.550	0.18	22.31	23.00	1.172	0.645	22.1

Table 27：SAR of LTE Band 2 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).

8.3.7 SAR Result of LTE Band 4

Ant 1 Test Record												
Test position	BW.	Modulation	RB Size_RB offset	Test ch./Freq.	Duty Cycle	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(1RB)												
Left cheek	20	QPSK	1_50	20175/1732.5	1:1	0.059	0.05	23.11	24.00	1.227	0.072	21.7
Left tilted	20	QPSK	1_50	20175/1732.5	1:1	0.023	0.02	23.11	24.00	1.227	0.028	21.7
Right cheek	20	QPSK	1_50	20175/1732.5	1:1	0.074	0.03	23.11	24.00	1.227	**0.091**	21.7
Right tilted	20	QPSK	1_50	20175/1732.5	1:1	0.045	0.01	23.11	24.00	1.227	0.055	21.7
Head Test Data(50%RB)												
Left cheek	20	QPSK	50_25	20300/1745	1:1	0.054	0.02	22.22	23.00	1.197	0.065	21.7
Left tilted	20	QPSK	50_25	20300/1745	1:1	0.000	0.00	22.22	23.00	1.197	0.000	21.7
Right cheek	20	QPSK	50_25	20300/1745	1:1	0.065	0.03	22.22	23.00	1.197	0.078	21.7
Right tilted	20	QPSK	50_25	20300/1745	1:1	0.042	0.02	22.22	23.00	1.197	0.050	21.7
Hotspot Test data(Separate 10mm 1RB)												
Front side	20	QPSK	1_50	20175/1732.5	1:1	0.178	-0.01	23.11	24.00	1.227	0.218	21.7
Back side	20	QPSK	1_50	20175/1732.5	1:1	0.661	-0.16	23.11	24.00	1.227	0.811	21.7
Back side	20	QPSK	1_50	20050/1720	1:1	0.610	0.03	23.09	24.00	1.233	0.752	21.7
Back side	20	QPSK	1_50	20300/1745	1:1	0.664	0.12	23.10	24.00	1.230	**0.817**	21.7
Left side	20	QPSK	1_50	20175/1732.5	1:1	0.091	0.18	23.11	24.00	1.227	0.112	21.7
Right side	20	QPSK	1_50	20175/1732.5	1:1	0.066	-0.08	23.11	24.00	1.227	0.081	21.7
Bottom side	20	QPSK	1_50	20175/1732.5	1:1	0.573	-0.01	23.11	24.00	1.227	0.703	21.7
Hotspot Test data(Separate 10mm 50%RB)												
Front side	20	QPSK	50_25	20300/1745	1:1	0.157	0.15	22.22	23.00	1.197	0.188	21.7
Back side	20	QPSK	50_25	20300/1745	1:1	0.528	0.01	22.22	23.00	1.197	0.632	21.7
Left side	20	QPSK	50_25	20300/1745	1:1	0.079	-0.05	22.22	23.00	1.197	0.095	21.7
Right side	20	QPSK	50_25	20300/1745	1:1	0.055	-0.05	22.22	23.00	1.197	0.066	21.7
Bottom side	20	QPSK	50_25	20300/1745	1:1	0.482	-0.06	22.22	23.00	1.197	0.577	21.7
Hotspot Test data(Separate 10mm 100%RB)												
Back side	20	QPSK	100_0	20050/1720	1:1	0.519	0.05	22.25	23.00	1.189	0.617	21.7

Table 28：SAR of LTE Band 4 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).

8.3.8 SAR Result of LTE Band 5

Ant 1 Test Record												
Test position	BW.	Modulation	RB Size_RB offset	Test ch./Freq.	Duty Cycle	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(1RB)												
Left cheek	10	QPSK	1_25	20450/829	1:1	0.064	0.16	23.33	24.00	1.167	0.075	22.1
Left tilted	10	QPSK	1_25	20450/829	1:1	0.033	-0.06	23.33	24.00	1.167	0.038	22.1
Right cheek	10	QPSK	1_25	20450/829	1:1	0.072	-0.03	23.33	24.00	1.167	**0.084**	22.1
Right tilted	10	QPSK	1_25	20450/829	1:1	0.028	0.04	23.33	24.00	1.167	0.033	22.1
Head Test Data(50%RB)												
Left cheek	10	QPSK	25_0	20600/844	1:1	0.043	0.07	22.30	23.00	1.175	0.051	22.1
Left tilted	10	QPSK	25_0	20600/844	1:1	0.020	0.07	22.30	23.00	1.175	0.023	22.1
Right cheek	10	QPSK	25_0	20600/844	1:1	0.046	0.11	22.30	23.00	1.175	0.054	22.1
Right tilted	10	QPSK	25_0	20600/844	1:1	0.020	0.04	22.30	23.00	1.175	0.024	22.1
Hotspot Test data(Separate 10mm 1RB)												
Front side	10	QPSK	1_25	20450/829	1:1	0.056	-0.11	23.33	24.00	1.167	0.065	22.1
Back side	10	QPSK	1_25	20450/829	1:1	0.179	-0.17	23.33	24.00	1.167	**0.209**	22.1
Left side	10	QPSK	1_25	20450/829	1:1	0.044	0.14	23.33	24.00	1.167	0.051	22.1
Right side	10	QPSK	1_25	20450/829	1:1	0.066	0.06	23.33	24.00	1.167	0.077	22.1
Bottom side	10	QPSK	1_25	20450/829	1:1	0.073	-0.02	23.33	24.00	1.167	0.085	22.1
Hotspot Test data(Separate 10mm 50%RB)												
Front side	10	QPSK	25_0	20600/844	1:1	0.048	-0.10	22.30	23.00	1.175	0.056	22.1
Back side	10	QPSK	25_0	20600/844	1:1	0.118	-0.08	22.30	23.00	1.175	0.139	22.1
Left side	10	QPSK	25_0	20600/844	1:1	0.045	0.06	22.30	23.00	1.175	0.053	22.1
Right side	10	QPSK	25_0	20600/844	1:1	0.059	-0.13	22.30	23.00	1.175	0.069	22.1
Bottom side	10	QPSK	25_0	20600/844	1:1	0.060	0.00	22.30	23.00	1.175	0.070	22.1
Ant 2 Test Record												
Test position	BW.	Modulation	RB Size_RB offset	Test ch./Freq.	Duty Cycle	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(1RB)												
Left cheek	10	QPSK	1_0	20600/844	1:1	0.523	0.08	21.70	22.50	1.202	0.629	22.1
Left tilted	10	QPSK	1_0	20600/844	1:1	0.392	0.12	21.70	22.50	1.202	0.471	22.1
Right cheek	10	QPSK	1_0	20600/844	1:1	0.646	0.04	21.70	22.50	1.202	0.777	22.1
Right tilted	10	QPSK	1_0	20600/844	1:1	0.576	0.09	21.70	22.50	1.202	0.693	22.1
Head Test Data(50%RB)												
Left cheek	10	QPSK	25_0	20525/836.5	1:1	0.579	0.01	21.69	22.50	1.205	0.698	22.1
Left tilted	10	QPSK	25_0	20525/836.5	1:1	0.400	0.05	21.69	22.50	1.205	0.482	22.1
Right cheek	10	QPSK	25_0	20525/836.5	1:1	0.667	0.02	21.69	22.50	1.205	0.804	22.1
Right cheek	10	QPSK	25_0	20450/829	1:1	0.618	-0.01	21.34	22.50	1.306	0.807	22.1
Right cheek	10	QPSK	25_0	20600/844	1:1	0.606	0.05	21.27	22.50	1.327	0.804	22.1
Right tilted	10	QPSK	25_0	20525/836.5	1:1	0.620	-0.05	21.69	22.50	1.205	0.747	22.1
Head Test Data(100%RB)												
Right cheek	10	QPSK	50_0	20450/829	1:1	0.609	0.05	21.25	22.50	1.334	**0.812**	22.1
Hotspot Test data(Separate 10mm 1RB)												
Front side	10	QPSK	1_25	20525/836.5	1:1	0.173	0.06	23.31	24.00	1.172	0.203	22.1
Back side	10	QPSK	1_25	20525/836.5	1:1	0.389	-0.03	23.31	24.00	1.172	**0.456**	22.1
Left side	10	QPSK	1_25	20525/836.5	1:1	0.068	-0.13	23.31	24.00	1.172	0.080	22.1
Top side	10	QPSK	1_25	20525/836.5	1:1	0.142	0.05	23.31	24.00	1.172	0.166	22.1
Hotspot Test data(Separate 10mm 50%RB)												

Front side	10	QPSK	25_25	20525/836.5	1:1	0.141	-0.12	22.24	23.00	1.191	0.168	22.1
Back side	10	QPSK	25_25	20525/836.5	1:1	0.217	0.08	22.24	23.00	1.191	0.258	22.1
Left side	10	QPSK	25_25	20525/836.5	1:1	0.056	0.02	22.24	23.00	1.191	0.067	22.1
Top side	10	QPSK	25_25	20525/836.5	1:1	0.112	-0.03	22.24	23.00	1.191	0.133	22.1

Table 29：SAR of LTE Band 5 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).

8.3.9 SAR Result of LTE Band 7

Ant 1 Test Record												
Test position	BW.	Modulation	RB Size_RB offset	Test ch./Freq.	Duty Cycle	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(1RB)												
Left cheek	20	QPSK	1_50	21350/2560	1:1	0.261	0.08	23.17	24.00	1.211	**0.316**	22.1
Left cheek	20	QPSK	1_0	21350/2560	1:1.58	0.199	0.07	23.10	24.00	1.230	0.245	22.1
	20	QPSK	1_99	21152/2540.2								
Left tilted	20	QPSK	1_50	21350/2560	1:1	0.126	0.01	23.17	24.00	1.211	0.153	22.1
Right cheek	20	QPSK	1_50	21350/2560	1:1	0.096	0.08	23.17	24.00	1.211	0.116	22.1
Right tilted	20	QPSK	1_50	21350/2560	1:1	0.049	0.07	23.17	24.00	1.211	0.060	22.1
Head Test Data(50%RB)												
Left cheek	20	QPSK	50_0	20850/2510	1:1	0.144	0.06	22.16	23.00	1.213	0.175	22.1
Left tilted	20	QPSK	50_0	20850/2510	1:1	0.114	0.05	22.16	23.00	1.213	0.138	22.1
Right cheek	20	QPSK	50_0	20850/2510	1:1	0.083	0.01	22.16	23.00	1.213	0.101	22.1
Right tilted	20	QPSK	50_0	20850/2510	1:1	0.039	0.01	22.16	23.00	1.213	0.048	22.1
Hotspot Test data(Separate 10mm 1RB)												
Front side	20	QPSK	1_50	21350/2560	1:1	0.309	0.19	23.17	24.00	1.211	0.374	22.1
Back side	20	QPSK	1_50	21350/2560	1:1	0.602	-0.09	23.17	24.00	1.211	**0.729**	22.1
Back side	20	QPSK	1_0	21350/2560	1:1.58	0.546	0.01	23.10	24.00	1.230	0.672	22.1
	20	QPSK	1_99	21152/2540.2								
Left side	20	QPSK	1_50	21350/2560	1:1	0.248	-0.12	23.17	24.00	1.211	0.300	22.1
Right side	20	QPSK	1_50	21350/2560	1:1	0.140	0.05	23.17	24.00	1.211	0.169	22.1
Bottom side	20	QPSK	1_50	21350/2560	1:1	0.385	0.00	23.17	24.00	1.211	0.466	22.1
Hotspot Test data(Separate 10mm 50%RB)												
Front side	20	QPSK	50_0	20850/2510	1:1	0.219	0.07	22.16	23.00	1.213	0.266	22.1
Back side	20	QPSK	50_0	20850/2510	1:1	0.416	-0.19	22.16	23.00	1.213	0.505	22.1
Left side	20	QPSK	50_0	20850/2510	1:1	0.186	0.15	22.16	23.00	1.213	0.226	22.1
Right side	20	QPSK	50_0	20850/2510	1:1	0.110	-0.11	22.16	23.00	1.213	0.133	22.1
Bottom side	20	QPSK	50_0	20850/2510	1:1	0.306	-0.08	22.16	23.00	1.213	0.371	22.1

Table 30：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).

8.3.10 SAR Result of LTE Band 38

Ant 1 Test Record												
Test position	BW.	Modulation	RB Size_RB offset	Test ch./Freq.	Duty Cycle	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(1RB)												
Left cheek	20	QPSK	1_50	38000/2595	1:1.58	0.146	0.04	23.19	24.00	1.205	**0.176**	22.1
Left cheek	20	QPSK	1_0	38150/2610	1:1.58	0.139	0.19	23.21	24.00	1.199	0.167	22.1
	20	QPSK	1_99	37952/2590.2								
Left tilted	20	QPSK	1_50	38000/2595	1:1.58	0.067	0.03	23.19	24.00	1.205	0.081	22.1
Right cheek	20	QPSK	1_50	38000/2595	1:1.58	0.064	0.02	23.19	24.00	1.205	0.077	22.1
Right tilted	20	QPSK	1_50	38000/2595	1:1.58	0.046	0.09	23.19	24.00	1.205	0.056	22.1
Head Test Data(50%RB)												
Left cheek	20	QPSK	50_50	38000/2595	1:1.58	0.088	0.03	22.18	23.00	1.208	0.106	22.1
Left tilted	20	QPSK	50_50	38000/2595	1:1.58	0.034	0.01	22.18	23.00	1.208	0.040	22.1
Right cheek	20	QPSK	50_50	38000/2595	1:1.58	0.034	0.02	22.18	23.00	1.208	0.042	22.1
Right tilted	20	QPSK	50_50	38000/2595	1:1.58	0.044	-0.16	22.18	23.00	1.208	0.053	22.1
Hotspot Test data(Separate 10mm 1RB)												
Front side	20	QPSK	1_50	38000/2595	1:1.58	0.147	0.05	23.19	24.00	1.205	0.177	22.1
Back side	20	QPSK	1_50	38000/2595	1:1.58	0.218	0.16	23.19	24.00	1.205	**0.263**	22.1
Back side	20	QPSK	1_0	38150/2610	1:1.58	0.201	-0.01	23.21	24.00	1.199	0.241	22.1
	20	QPSK	1_99	37952/2590.2								
Left side	20	QPSK	1_50	38000/2595	1:1.58	0.101	-0.04	23.19	24.00	1.205	0.122	22.1
Right side	20	QPSK	1_50	38000/2595	1:1.58	0.090	0.02	23.19	24.00	1.205	0.108	22.1
Bottom side	20	QPSK	1_50	38000/2595	1:1.58	0.162	-0.06	23.19	24.00	1.205	0.195	22.1
Hotspot Test data(Separate 10mm 50%RB)												
Front side	20	QPSK	50_50	38000/2595	1:1.58	0.116	0.02	22.18	23.00	1.208	0.140	22.1
Back side	20	QPSK	50_50	38000/2595	1:1.58	0.201	0.01	22.18	23.00	1.208	0.243	22.1
Left side	20	QPSK	50_50	38000/2595	1:1.58	0.076	0.02	22.18	23.00	1.208	0.092	22.1
Right side	20	QPSK	50_50	38000/2595	1:1.58	0.073	0.11	22.18	23.00	1.208	0.088	22.1
Bottom side	20	QPSK	50_50	38000/2595	1:1.58	0.121	0.15	22.18	23.00	1.208	0.146	22.1

Table 31：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).

8.3.11 SAR Result of LTE Band 41

Ant 1 Test Record												
Test position	BW.	Modulation	RB Size_RB offset	Test ch./Freq.	Duty Cycle	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(1RB)												
Left cheek	20	QPSK	1_50	40990/2630	1:1.58	0.036	0.03	23.28	24.00	1.180	**0.042**	22.1
Left tilted	20	QPSK	1_50	40990/2630	1:1.58	0.021	0.06	23.28	24.00	1.180	0.025	22.1
Right cheek	20	QPSK	1_50	40990/2630	1:1.58	0.019	0.11	23.28	24.00	1.180	0.022	22.1
Right tilted	20	QPSK	1_50	40990/2630	1:1.58	0.016	0.03	23.28	24.00	1.180	0.019	22.1
Head Test Data(50%RB)												
Left cheek	20	QPSK	50_50	40990/2630	1:1.58	0.012	0.02	22.18	23.00	1.208	0.014	22.1
Left tilted	20	QPSK	50_50	40990/2630	1:1.58	0.009	0.10	22.18	23.00	1.208	0.011	22.1
Right cheek	20	QPSK	50_50	40990/2630	1:1.58	0.016	0.03	22.18	23.00	1.208	0.019	22.1
Right tilted	20	QPSK	50_50	40990/2630	1:1.58	0.012	0.08	22.18	23.00	1.208	0.015	22.1
Hotspot Test data(Separate 10mm 1RB)												
Front side	20	QPSK	1_50	40990/2630	1:1.58	0.154	0.03	23.28	24.00	1.180	0.182	22.1
Back side	20	QPSK	1_50	40990/2630	1:1.58	0.502	0.01	23.28	24.00	1.180	**0.593**	22.1
Left side	20	QPSK	1_50	40990/2630	1:1.58	0.082	0.13	23.28	24.00	1.180	0.097	22.1
Right side	20	QPSK	1_50	40990/2630	1:1.58	0.078	0.18	23.28	24.00	1.180	0.092	22.1
Bottom side	20	QPSK	1_50	40990/2630	1:1.58	0.298	0.14	23.28	24.00	1.180	0.352	22.1
Hotspot Test data(Separate 10mm 50%RB)												
Front side	20	QPSK	50_50	40990/2630	1:1.58	0.128	0.01	22.18	23.00	1.208	0.155	22.1
Back side	20	QPSK	50_50	40990/2630	1:1.58	0.334	-0.02	22.18	23.00	1.208	0.403	22.1
Left side	20	QPSK	50_50	40990/2630	1:1.58	0.064	0.04	22.18	23.00	1.208	0.077	22.1
Right side	20	QPSK	50_50	40990/2630	1:1.58	0.062	0.10	22.18	23.00	1.208	0.075	22.1
Bottom side	20	QPSK	50_50	40990/2630	1:1.58	0.260	-0.02	22.18	23.00	1.208	0.314	22.1

Table 32：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).

8.3.12SAR 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 1-g (W/kg)	Liquid Temp. (℃)
Head Test data											
Left cheek	802.11b	1/2412	98.82%	1.012	0.667	0.02	16.89	17.50	1.151	**0.777**	22.0
Left tilted	802.11b	1/2412	98.82%	1.012	0.658	0.15	16.89	17.50	1.151	0.766	22.0
Right cheek	802.11b	1/2412	98.82%	1.012	0.291	-0.04	16.89	17.50	1.151	0.339	22.0
Right tilted	802.11b	1/2412	98.82%	1.012	0.298	0.03	16.89	17.50	1.151	0.347	22.0
Hotspot Test data (Separate 10mm)											
Front side	802.11b	1/2412	98.82%	1.012	0.087	0.05	16.89	17.50	1.151	0.101	22.0
Back side	802.11b	1/2412	98.82%	1.012	0.231	0.12	16.89	17.50	1.151	**0.269**	22.0
Right side	802.11b	1/2412	98.82%	1.012	0.100	0.05	16.89	17.50	1.151	0.116	22.0
Top side	802.11b	1/2412	98.82%	1.012	0.072	0.04	16.89	17.50	1.151	0.084	22.0

Table 33：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) Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

4) 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.

8.3.13 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 1-g (W/kg)	Liquid Temp. (℃)
Head Test data of U-NII-2A											
Left cheek	802.11a	52/5260	94.78%	1.055	0.217	0.16	14.11	15.00	1.227	0.281	22.3
Left tilted	802.11a	52/5260	94.78%	1.055	0.248	0.09	14.11	15.00	1.227	0.321	22.3
Right cheek	802.11a	52/5260	94.78%	1.055	0.160	0.07	14.11	15.00	1.227	0.207	22.3
Right tilted	802.11a	52/5260	94.78%	1.055	0.225	-0.13	14.11	15.00	1.227	0.291	22.3
Head Test data of U-NII-2C											
Left cheek	802.11a	100/5500	94.78%	1.055	0.519	0.17	13.92	15.00	1.282	0.702	22.3
Left tilted	802.11a	100/5500	94.78%	1.055	0.536	0.01	13.92	15.00	1.282	**0.725**	22.3
Right cheek	802.11a	100/5500	94.78%	1.055	0.162	0.09	13.92	15.00	1.282	0.219	22.3
Right tilted	802.11a	100/5500	94.78%	1.055	0.230	-0.12	13.92	15.00	1.282	0.311	22.3
Head Test data of U-NII-3											
Left cheek	802.11a	157/5785	94.78%	1.055	0.414	0.03	13.93	15.00	1.279	0.559	22.3
Left tilted	802.11a	157/5785	94.78%	1.055	0.443	0.03	13.93	15.00	1.279	0.598	22.3
Right cheek	802.11a	157/5785	94.78%	1.055	0.183	-0.01	13.93	15.00	1.279	0.247	22.3
Right tilted	802.11a	157/5785	94.78%	1.055	0.137	0.05	13.93	15.00	1.279	0.185	22.3
Body worn Test data of U-NII-2A (Separate 10mm)											
Front side	802.11a	52/5260	94.78%	1.055	0.056	0.02	14.11	15.00	1.227	0.073	22.3
Back side	802.11a	52/5260	94.78%	1.055	0.203	-0.06	14.11	15.00	1.227	0.263	22.3
Body worn Test data of U-NII-2C(Separate 10mm)											
Front side	802.11a	100/5500	94.78%	1.055	0.068	-0.05	13.92	15.00	1.282	0.092	22.3
Back side	802.11a	100/5500	94.78%	1.055	0.336	0.03	13.92	15.00	1.282	**0.455**	22.3
Hotspot Test data of U-NII-1(Separate 10mm)											
Front side	802.11a	36/5180	94.78%	1.055	0.067	0.05	14.06	15.00	1.242	0.088	22.3
Back side	802.11a	36/5180	94.78%	1.055	0.193	-0.10	14.06	15.00	1.242	0.253	22.3
Right side	802.11a	36/5180	94.78%	1.055	0.120	0.15	14.06	15.00	1.242	0.157	22.3
Top side	802.11a	36/5180	94.78%	1.055	0.303	0.08	14.06	15.00	1.242	**0.397**	22.3
Hotspot Test data of U-NII-3 (Separate 10mm)											
Front side	802.11a	157/5785	94.78%	1.055	0.059	-0.08	13.93	15.00	1.279	0.080	22.3
Back side	802.11a	157/5785	94.78%	1.055	0.113	-0.02	13.93	15.00	1.279	0.153	22.3
Right side	802.11a	157/5785	94.78%	1.055	0.141	0.00	13.93	15.00	1.279	0.190	22.3
Top side	802.11a	157/5785	94.78%	1.055	0.138	0.10	13.93	15.00	1.279	0.186	22.3

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 1-g (W/kg)	Liquid Temp. (℃)
Product specific 10gSAR Test data of U-NII-2A(Separate 0mm)											
Front side	802.11a	52/5260	94.78%	1.055	0.163	-0.06	14.11	15.00	1.227	0.211	22.3
Back side	802.11a	52/5260	94.78%	1.055	0.364	0.12	14.11	15.00	1.227	0.471	22.3
Right side	802.11a	52/5260	94.78%	1.055	0.139	0.19	14.11	15.00	1.227	0.180	22.3
Top side	802.11a	52/5260	94.78%	1.055	0.433	0.15	14.11	15.00	1.227	0.561	22.3
Product specific 10gSAR Test data of U-NII-2C(Separate 0mm)											
Front side	802.11a	100/5500	94.78%	1.055	0.173	0.05	13.92	15.00	1.282	0.234	22.3
Back side	802.11a	100/5500	94.78%	1.055	0.498	0.00	13.92	15.00	1.282	**0.674**	22.3
Right side	802.11a	100/5500	94.78%	1.055	0.187	-0.02	13.92	15.00	1.282	0.253	22.3
Top side	802.11a	100/5500	94.78%	1.055	0.373	-0.15	13.92	15.00	1.282	0.505	22.3

Table 34：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.

8.3.14 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	39/2441	84.54%	1.183	0.076	0.02	9.70	11.00	1.349	**0.122**	22.0
Left tilted	DH5	39/2441	84.54%	1.183	0.060	0.01	9.70	11.00	1.349	0.095	22.0
Right cheek	DH5	39/2441	84.54%	1.183	0.026	0.06	9.70	11.00	1.349	0.042	22.0
Right tilted	DH5	39/2441	84.54%	1.183	0.025	0.12	9.70	11.00	1.349	0.040	22.0
Hotspot Test data (Separate 10mm)											
Front side	DH5	39/2441	84.54%	1.183	0.011	-0.07	9.70	11.00	1.349	0.017	22.0
Back side	DH5	39/2441	84.54%	1.183	0.016	0.01	9.70	11.00	1.349	**0.026**	22.0
Right side	DH5	39/2441	84.54%	1.183	0.015	0.05	9.70	11.00	1.349	0.023	22.0
Top side	DH5	39/2441	84.54%	1.183	0.008	-0.03	9.70	11.00	1.349	0.012	22.0

Table 35：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).

8.4 Multiple Transmitter Evaluation

8.4.1 Simultaneous SAR SAR test evaluation

- **Simultaneous Transmission Possibilities**

NO.	Simultaneous Tx Combination	Head	Body	Hotspot (10mm)	Product Specific 10-g (0mm)
1	GSM Voice(Ant 1) + BT	Yes	Yes	NA	Yes
2	GSM DATA(Ant 1) + BT	N/A	Yes	NA	Yes
3	GSM Voice(Ant 2) + BT	Yes	Yes	NA	Yes
4	GSM DATA (Ant 2)+ BT	N/A	Yes	NA	Yes
5	GSM Voice(Ant 1) + WiFi2.4G	Yes	Yes	NA	Yes
6	GSM Voice(Ant 1) + WiFi5G	Yes	Yes	NA	Yes
7	GSM DATA(Ant 1) + WiFi2.4G	N/A	Yes	Yes	Yes
8	GSM DATA(Ant 1) + WiFi5G	N/A	Yes	Yes	Yes
9	GSM Voice(Ant 2) + WiFi2.4G	Yes	Yes	NA	Yes
10	GSM Voice(Ant 2) + WiFi5G	Yes	Yes	NA	Yes
11	GSM DATA(Ant 2) + WiFi2.4G	N/A	Yes	Yes	Yes
12	GSM DATA(Ant 2) + WiFi5G	N/A	Yes	Yes	Yes
13	WCDMA (Ant 1) + BT	Yes	Yes	NA	Yes
14	WCDMA (Ant 2) + BT	Yes	Yes	NA	Yes
15	WCDMA (Ant 1) + WiFi2.4G	Yes	Yes	Yes	Yes
16	WCDMA (Ant 1) + WiFi5G	Yes	Yes	Yes	Yes
17	WCDMA (Ant 2) + WiFi2.4G	Yes	Yes	Yes	Yes
18	WCDMA (Ant 2) + WiFi5G	Yes	Yes	Yes	Yes
19	LTE (Ant 1) + WiFi2.4G	Yes*	Yes*	Yes	Yes
20	LTE (Ant 1) + WiFi5G	Yes	Yes	Yes	Yes
21	LTE (Ant 1) + BT	Yes	Yes*	NA	Yes
22	LTE (Ant 2) + WiFi2.4G	Yes*	Yes*	Yes	Yes
23	LTE (Ant 2) + WiFi5G	Yes	Yes	Yes	Yes
24	LTE (Ant 2) + BT	Yes	Yes*	NA	Yes
25	GSM Voice(Ant 1) + WiFi5G+BT	Yes	Yes	NA	Yes
26	GSM DATA(Ant 1) + WiFi5G+BT	N/A	Yes	Yes	Yes
27	GSM Voice(Ant 2) + WiFi5G+BT	Yes	Yes	NA	Yes
28	GSM DATA(Ant 2) + WiFi5G+BT	N/A	Yes	Yes	Yes
29	WCDMA (Ant 1) + WiFi5G+BT	Yes	Yes	Yes	Yes
30	WCDMA (Ant 2) + WiFi5G+BT	Yes	Yes	Yes	Yes
31	LTE (Ant 1) + WiFi5G+BT	Yes	Yes	Yes	Yes
32	LTE (Ant 2) + WiFi5G+BT	Yes	Yes	Yes	Yes

8.4.2 Estimated SAR

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

• (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f(GHz)/x] W/kg for test separation distances ≤ 50 mm;

Where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.

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

Estimated SAR Result

Freq. Band	Frequency (GHz)	Test Position	max. power(dBm)	Test Separation (mm)	Estimated 10g SAR (W/kg)
Bluetooth	2.48	Product specific 10g SAR	11.00	0	0.211

8.4.3 Simultaneous Transmission SAR Summation Scenario

Test position		Bottom Antenna SARmax (W/kg)											WiFi Antenna SARmax (W/kg)			Summed 1g SARmax (W/kg)
		GSM850	GSM1900	WCDMA Band II	WCDMA Band IV	WCDMA Band V	LTE Band 2	LTE Band 4	LTE Band 5	LTE Band 7	LTE Band 38	LTE Band 41	WIFI 2.4G	WIFI 5G	Bluetooth	
Head	Left Touch	0.058	0.057	0.118	0.093	0.088	0.091	0.072	0.075	0.316	0.176	0.042	**0.777**	0.702	0.122	**1.140**
	Left Tilt	0.030	0.053	0.133	0.087	0.032	0.078	0.028	0.038	0.153	0.081	0.025	0.766	0.725	0.095	0.973
	Right Touch	0.065	0.075	0.109	0.081	0.099	0.138	0.091	0.084	0.116	0.077	0.022	0.339	0.247	0.042	0.477
	Right Tilt	0.034	0.043	0.076	0.060	0.041	0.056	0.055	0.033	0.060	0.056	0.019	0.347	0.311	0.040	0.427
Body worn 10mm	Front	0.048	0.119	0.322	0.254	0.076	0.252	0.218	0.065	0.374	0.177	0.182	0.101	0.092	0.017	0.483
	Back	0.136	0.359	0.851	**0.999**	0.191	0.657	0.817	0.209	0.729	0.263	0.593	0.269	0.455	0.026	**1.480**
Hotspot 10mm	Front	0.073	0.213	0.322	0.254	0.076	0.252	0.218	0.065	0.374	0.177	0.182	0.101	0.088	0.017	0.479
	Back	0.188	0.571	0.851	**0.999**	0.191	0.657	0.817	0.209	0.729	0.263	0.593	0.269	0.253	0.026	**1.278**
	Left	0.067	0.125	0.179	0.123	0.060	0.143	0.112	0.053	0.300	0.122	0.097	/	/	/	0.300
	Right	0.073	0.080	0.116	0.089	0.086	0.095	0.081	0.077	0.169	0.108	0.092	0.116	0.190	0.023	0.382
	Top	/	/	/	/	/	/	/	/	/	/	/	0.084	0.397	0.012	0.409
	Bottom	0.086	0.889	0.795	0.794	0.074	0.795	0.703	0.085	0.466	0.195	0.352	/	/	/	0.889

Test position		Bottom Antenna SARmax (W/kg)											WiFi Antenna SARmax (W/kg)			Summed 10g SARmax (W/kg)
		GSM850	GSM1900	WCDMA Band II	WCDMA Band IV	WCDMA Band V	LTE Band 2	LTE Band 4	LTE Band 5	LTE Band 7	LTE Band 38	LTE Band 41	WIFI 2.4G	WIFI 5G	Bluetooth	
0mm	Front	/	/	/	/	/	/	/	/	/	/	/	/	0.234	0.211	0.445
	Back	/	/	/	/	/	/	/	/	/	/	/	/	**0.674**	0.211	**0.885**
	Left	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.000
	Right	/	/	/	/	/	/	/	/	/	/	/	/	0.253	0.211	0.464
	Top	/	/	/	/	/	/	/	/	/	/	/	/	0.561	0.211	0.772
	Bottom	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.000

Test position		Top Antenna SARmax (W/kg)			WiFi Antenna SARmax (W/kg)			Summed 1g SARmax (W/kg)
		GSM850	WCDMA Band V	LTE Band 5	WIFI 2.4G	WIFI 5G	Bluetooth	
Head	Left Touch	0.730	0.607	0.698	0.777	0.702	0.122	**1.554**
	Left Tilt	0.611	0.515	0.482	0.766	0.725	0.095	1.431
	Right Touch	**0.913**	0.888	0.812	0.339	0.247	0.042	1.252
	Right Tilt	0.858	0.660	0.747	0.347	0.311	0.040	1.209
Body worn 10mm	Front	0.125	0.246	0.203	0.101	0.092	0.017	0.355
	Back	0.441	**0.476**	0.456	0.269	0.455	0.026	**0.957**
Hotspot 10mm	Front	0.269	0.246	0.203	0.101	0.088	0.017	0.374
	Back	**0.619**	0.476	0.456	0.269	0.253	0.026	**0.898**
	Left	0.110	0.099	0.080	/	/	/	0.110
	Right	/	/	/	0.116	0.190	0.023	0.213
	Top	0.258	0.187	0.166	0.084	0.397	0.012	0.667
	Bottom	/	/	/	/	/	/	/

Test position		Top Antenna SARmax (W/kg)			WiFi Antenna SARmax (W/kg)			Summed 10g SARmax (W/kg)
		GSM850	WCDMA Band V	LTE Band 5	WIFI 2.4G	WIFI 5G	Bluetooth	
0mm	Front	/	/	/	/	0.234	0.211	0.445
	Back	/	/	/	/	**0.674**	0.211	**0.885**
	Left	/	/	/	/	/	/	0.000
	Right	/	/	/	/	0.253	0.211	0.464
	Top	/	/	/	/	0.561	0.211	0.772
	Bottom	/	/	/	/	/	/	0.000

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9 Equipment list

Test Platform	SPEAG DASY5 Professional
Description	SAR Test System (Frequency range 300MHz-6GHz)
Software Reference	DASY52 52; SEMCAD X

Hardware Reference

	Equipment	Manufacturer	Model	Serial Number	Calibration Date	Due date of calibration
☒	Twin Phantom	SPEAG	SAM 1	1640	NCR	NCR
☒	Twin Phantom	SPEAG	SAM 2	1913	NCR	NCR
☒	Twin Phantom	SPEAG	SAM 3	1912	NCR	NCR
☒	Twin Phantom	SPEAG	SAM 7	1027	NCR	NCR
☒	Twin Phantom	SPEAG	SAM 8	1063	NCR	NCR
☒	DAE	SPEAG	DAE4	896	2019-09-18	2020-09-17
☒	DAE	SPEAG	DAE4	1267	2019-12-17	2020-12-16
☒	DAE	SPEAG	DAE4	1428	2020-03-03	2021-03-02
☒	E-Field Probe	SPEAG	EX3DV4	3748	2019-06-19	2020-06-18
☒	E-Field Probe	SPEAG	EX3DV4	3982	2019-09-11	2020-09-10
☒	E-Field Probe	SPEAG	EX3DV4	3923	2019-10-22	2020-10-21
☒	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	CMU200	123090	2019-06-25	2020-06-24
☒	Radio Communication Analyzer	Anritsu	MT8821C	6201502984	2019-06-25	2020-06-24
☒	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

☒	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	2020-04-15	2021-04-14
☒	Humidity and Temperature Indicator	KIMTOKA	KIMTOKA	NA	2020-04-15	2021-04-14

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

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Appendix A

Detailed System Check Results

1. System Performance Check
System Performance Check 835 MHz Head
System Performance Check 1750 MHz Head
System Performance Check 1900 MHz Head
System Performance Check 2450 MHz Head
System Performance Check 2600 MHz Head
System Performance Check 5250 MHz Head
System Performance Check 5600 MHz Head
System Performance Check 5750 MHz Head

Date: 2020-04-23

Test Laboratory: SGS-SAR Lab

System Performance Check 835 MHz Head

DUT: D835V2; Type: D835V2; Serial: 4d105

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1

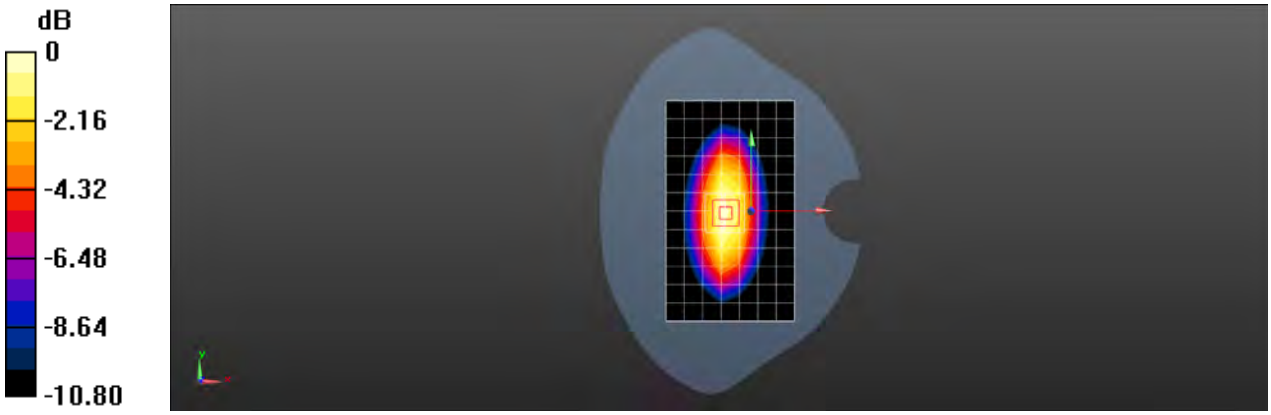
Medium: HSL835;Medium parameters used: f = 835 MHz; σ = 0.936 S/m; ε_r = 42.142; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3748; ConvF(8.76, 8.76, 8.76); Calibrated: 2019-06-19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1267; Calibrated: 2019-12-17
- Phantom: SAM 7; Type: SAM; Serial: 1027
- DASY52 4.7.80(0); SEMCAD X 14.6.13(7474)

Body/d=15mm, Pin=250mW/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.19 W/kg

Body/d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 53.77 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.99 W/kg
SAR(1 g) = 2.6 W/kg; SAR(10 g) = 1.7 W/kg
Maximum value of SAR (measured) = 3.33 W/kg



0 dB = 3.33 W/kg = 5.22 dBW/kg

Date: 2020-04-24

Test Laboratory: SGS-SAR Lab

System Performance Check 835 MHz Head

DUT: D835V2; Type: D835V2; Serial: 4d105

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1

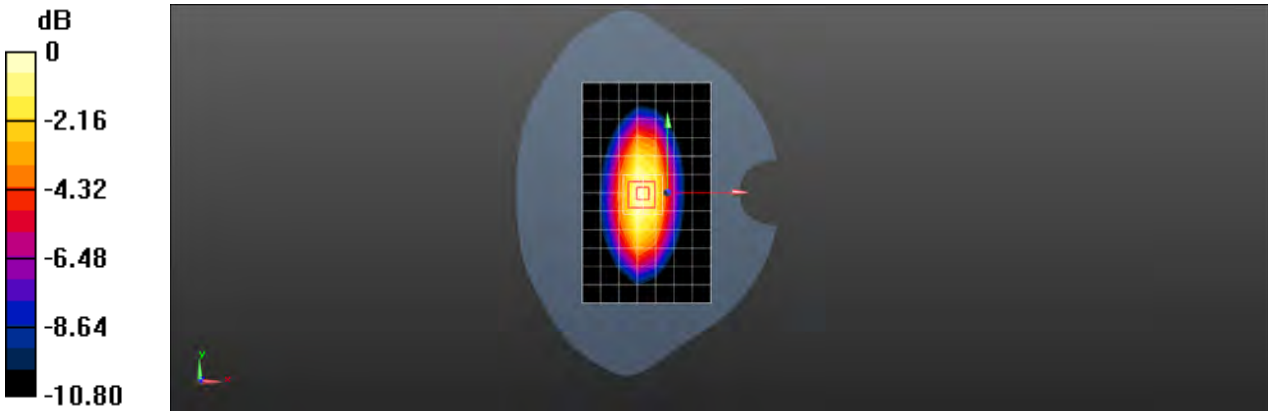
Medium: HSL835;Medium parameters used: f = 835 MHz; σ = 0.939 S/m; ε_r = 41.778; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3748; ConvF(8.76, 8.76, 8.76); Calibrated: 2019-06-19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1267; Calibrated: 2019-12-17
- Phantom: SAM 7; Type: SAM; Serial: 1027
- DASY52 4.7.80(0); SEMCAD X 14.6.13(7474)

Body/d=15mm, Pin=250mW/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.15 W/kg

Body/d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 53.84 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 4.03 W/kg
SAR(1 g) = 2.61 W/kg; SAR(10 g) = 1.7 W/kg
Maximum value of SAR (measured) = 3.36 W/kg



0 dB = 3.36 W/kg = 5.26 dBW/kg

Date: 2020-04-22

Test Laboratory: SGS-SAR Lab

System Performance Check 1750 MHz Head

DUT: D1750V2; Type: D1750V2; Serial: 1149

Communication System: UID 0, CW (0); Frequency: 1750 MHz;Duty Cycle: 1:1

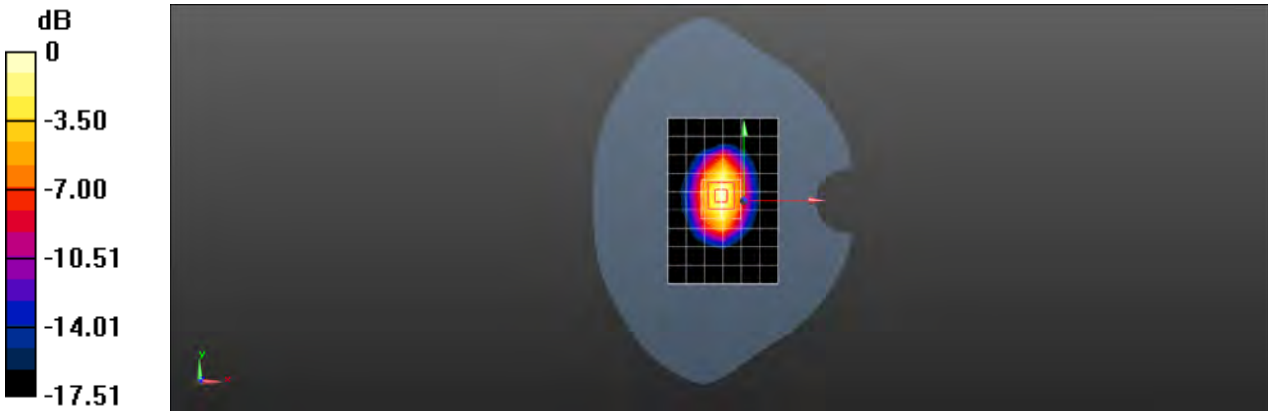
Medium: HSL1750;Medium parameters used: f = 1750 MHz; σ = 1.33 S/m; ε_r = 39.574; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3982; ConvF(8.8, 8.8, 8.8); Calibrated: 2019-09-11
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1428; Calibrated: 2020-03-03
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Body/d=10mm, Pin=250mW/Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 13.9 W/kg

Body/d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 85.92 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 17.2 W/kg
SAR(1 g) = 9.26 W/kg; SAR(10 g) = 4.92 W/kg
Maximum value of SAR (measured) = 14.2 W/kg



0 dB = 14.2 W/kg = 11.52 dBW/kg

Date: 2020-04-23

Test Laboratory: SGS-SAR Lab

System Performance Check 1900 MHz Head

DUT: D1900V2; Type: D1900V2; Serial: 5d028

Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1

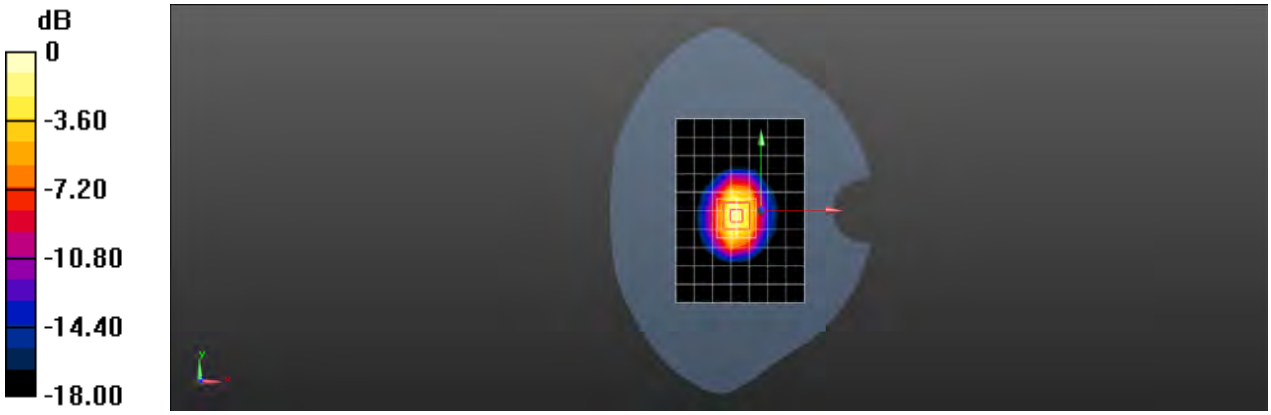
Medium: HSL1900;Medium parameters used: f = 1900 MHz; σ = 1.408 S/m; ε_r = 41.526; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3982; ConvF(8.48, 8.48, 8.48); Calibrated: 2019-09-11
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1428; Calibrated: 2020-03-03
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Body/d=10mm, Pin=250mW/Area Scan (8x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 9.85 W/kg

Body/d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 88.60 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 19.2 W/kg
SAR(1 g) = 10.4 W/kg; SAR(10 g) = 5.38 W/kg
Maximum value of SAR (measured) = 11.6 W/kg



0 dB = 11.6 W/kg = 10.64 dBW/kg

Date: 2020-04-24

Test Laboratory: SGS-SAR Lab

System Performance Check 2450MHz Head

DUT: D2450V2; Type: D2450V2; Serial: 733

Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1

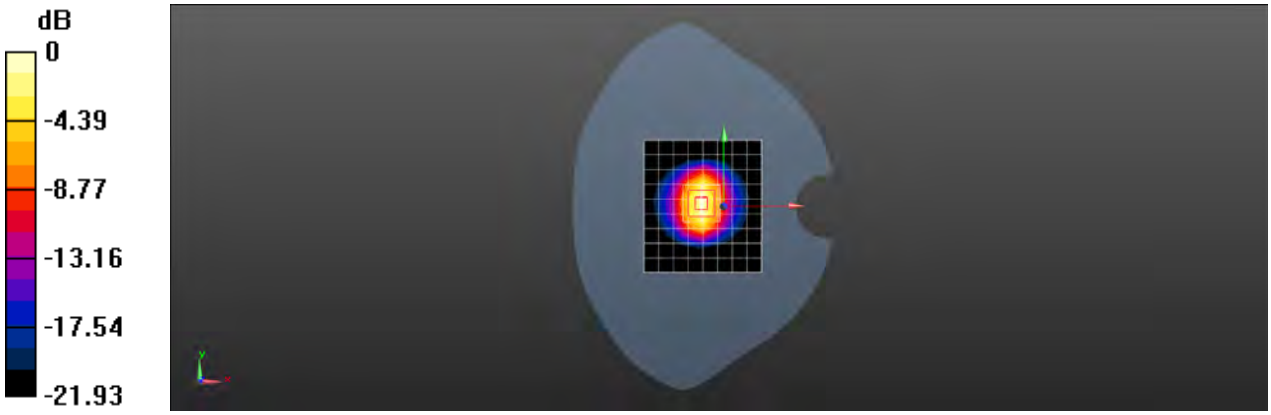
Medium: HSL2450;Medium parameters used: f = 2450 MHz; σ = 1.824 S/m; ε_r = 40.721; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.87, 7.87, 7.87); Calibrated: 2019-10-22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2019-09-18
- Phantom: SAM 2; Type: SAM; Serial: 1913
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Body/d=10mm, Pin=250mW/Area Scan (9x10x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 21.5 W/kg

Body/d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.88 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 27.3 W/kg
SAR(1 g) = 13.3 W/kg; SAR(10 g) = 6.16 W/kg
Maximum value of SAR (measured) = 22.2 W/kg



0 dB = 22.2 W/kg = 13.46 dBW/kg

Date: 2020-04-28

Test Laboratory: SGS-SAR Lab

System Performance Check 2600MHz Head

DUT: D2600V2; Type: D2600V2; Serial: 1125

Communication System: UID 0, CW (0); Frequency: 2600 MHz;Duty Cycle: 1:1

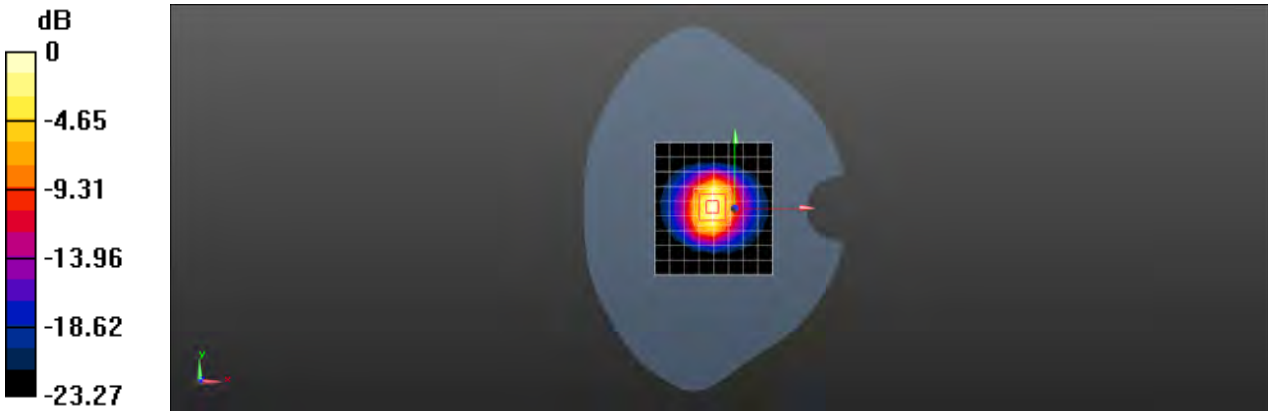
Medium: HSL2600;Medium parameters used: f = 2600 MHz; σ = 1.994 S/m; ε_r = 40.181; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.74, 7.74, 7.74); Calibrated: 2019-10-22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2019-09-18
- Phantom: SAM 2; Type: SAM; Serial: 1913
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Body/d=10mm, Pin=250mW/Area Scan (9x10x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 22.5 W/kg

Body/d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.04 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 30.0 W/kg
SAR(1 g) = 14 W/kg; SAR(10 g) = 6.29 W/kg
Maximum value of SAR (measured) = 24.2 W/kg



0 dB = 24.2 W/kg = 13.84 dBW/kg

Date: 2020-04-26

Test Laboratory: SGS-SAR Lab

System Performance Check 5.25GHz Head

DUT: D5GHzV2; Type: D5GHzV2; Serial: 1165

Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1

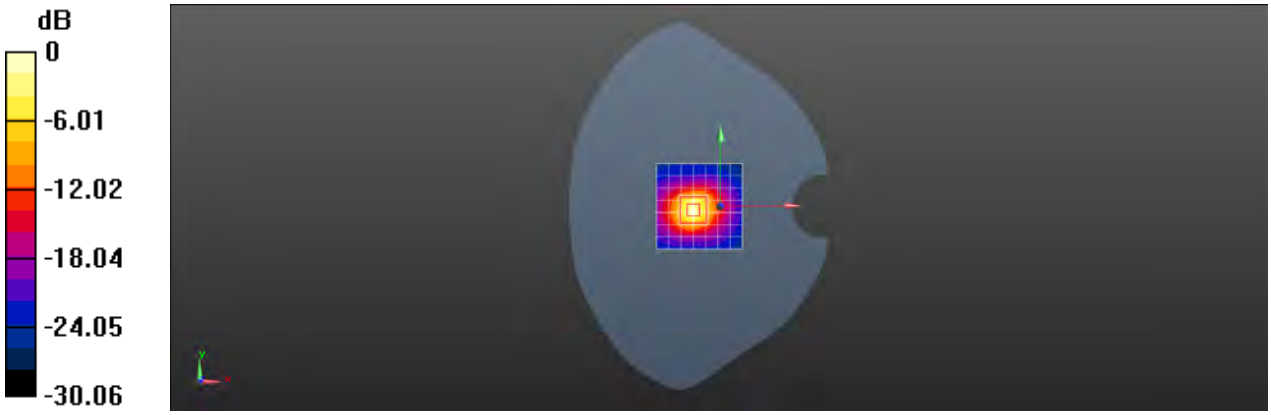
Medium: HSL5G;Medium parameters used: f = 5250 MHz; σ = 4.675 S/m; ε_r = 36.73; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(5.34, 5.34, 5.34); Calibrated: 2019-10-22
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2019-09-18
- Phantom: SAM 1; Type: SAM; Serial: 1640
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Body/d=10mm, Pin=100mW, f=5250 MHz/Area Scan (8x8x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 19.1 W/kg

Body/d=10mm, Pin=100mW, f=5250 MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 58.28 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 32.1 W/kg
SAR(1 g) = 7.89 W/kg; SAR(10 g) = 2.27 W/kg
Maximum value of SAR (measured) = 20.2 W/kg



0 dB = 20.2 W/kg = 13.05 dBW/kg

Date: 2020-04-25

Test Laboratory: SGS-SAR Lab

System Performance Check 5.6GHz Head

DUT: D5GHzV2; Type: D5GHzV2; Serial: 1165

Communication System: UID 0, CW (0); Frequency: 5600 MHz;Duty Cycle: 1:1

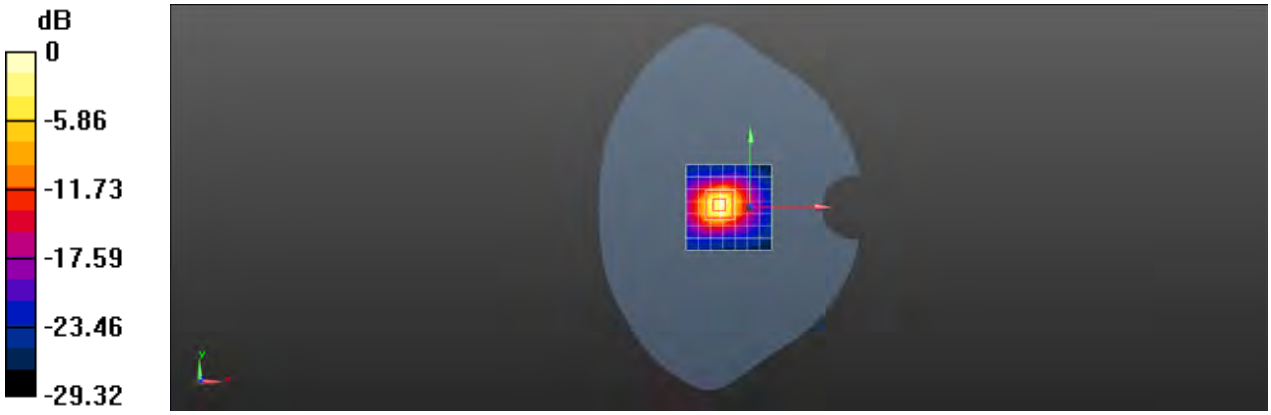
Medium: HSL5G;Medium parameters used: f = 5600 MHz; σ = 5.059 S/m; ε_r = 35.778; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(4.9, 4.9, 4.9); Calibrated: 2019-10-22
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2019-09-18
- Phantom: SAM 1; Type: SAM; Serial: 1640
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Body/d=10mm, Pin=100mW, f=5600 MHz/Area Scan (8x8x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 18.0 W/kg

Body/d=10mm, Pin=100mW, f=5600 MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 49.86 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 36.4 W/kg
SAR(1 g) = 8.4 W/kg; SAR(10 g) = 2.4 W/kg
Maximum value of SAR (measured) = 21.8 W/kg



0 dB = 21.8 W/kg = 13.38 dBW/kg

Date: 2020-04-27

Test Laboratory: SGS-SAR Lab

System Performance Check 5.75GHz Head

DUT: D5GHzV2; Type: D5GHzV2; Serial: 1165

Communication System: UID 0, CW (0); Frequency: 5750 MHz;Duty Cycle: 1:1

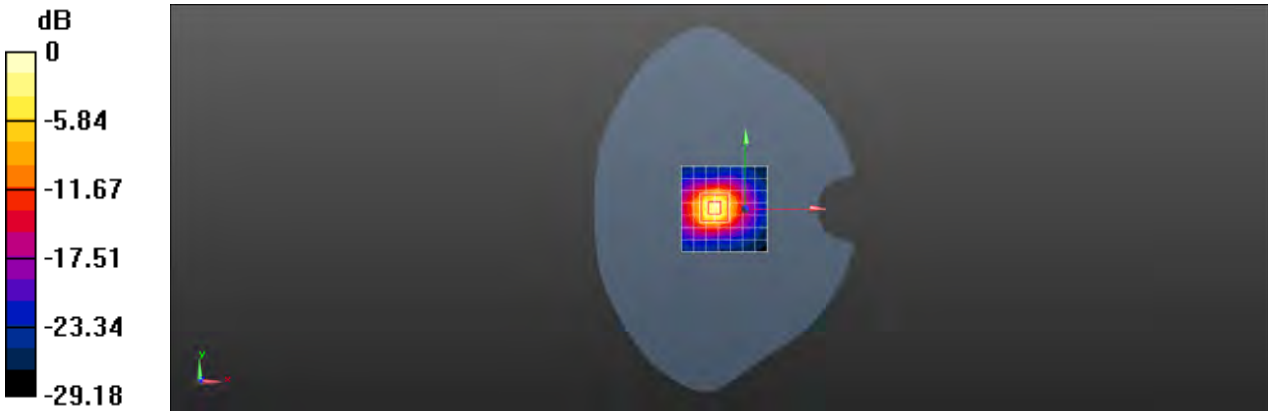
Medium: HSL5G;Medium parameters used: f = 5750 MHz; σ = 5.229 S/m; ε_r = 35.414; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(4.83, 4.83, 4.83); Calibrated: 2019-10-22
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2019-09-18
- Phantom: SAM 1; Type: SAM; Serial: 1640
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Body/d=10mm, Pin=100mW, f=5750 MHz/Area Scan (8x8x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 15.2 W/kg

Body/d=10mm, Pin=100mW, f=5750 MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 45.88 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 34.5 W/kg
SAR(1 g) = 7.77 W/kg; SAR(10 g) = 2.21 W/kg
Maximum value of SAR (measured) = 20.6 W/kg



0 dB = 20.6 W/kg = 13.14 dBW/kg

System Validation

Per FCC KDB 865664 D02, SAR system verification is required to confirm measurement accuracy. The SAR systems (including SAR probes, system components and software versions) used for this device were validated against its performance specifications prior to the SAR measurements. Reference dipoles are used with the required tissue-equivalent media for system validation, according to the procedures outlined in FCC KDB 865664 D01 and IEEE 1528-2013.Since SAR probe calibrations are frequency dependent, each probe calibration point must be validated at a frequency within the valid frequency range of the probe calibration point, using the system that normally operates with the probe for routine SAR measurements and according to the required tissue-equivalent media.

a tabulated summary of the system validation status, measurement frequencies, SAR probes, calibrated signal type(s) and tissue dielectric parameters has been included.

Table of SAR System validation summary:

Frequency (MHz)	Date	Probe SN	Probe Type	Probe CAL Point		PERM (εr)	COND (σ)	CW Validation			MOD.Validation		
								Sensitivity	Probe Linarity	Probe Isotropy	Modulation	Duty. Factore	PAR
750	2019/06/28	3748	EX3DV4	750	Head	42.653	0.898	PASS	PASS	PASS	N/A	N/A	N/A
835	2019/06/28	3748	EX3DV4	835	Head	41.876	0.903	PASS	PASS	PASS	GMSK	PASS	N/A
1750	2019/06/28	3748	EX3DV4	1750	Head	40.832	1.379	PASS	PASS	PASS	N/A	N/A	N/A
1900	2019/06/28	3748	EX3DV4	1900	Head	41.287	1.415	PASS	PASS	PASS	GMSK	PASS	N/A
2300	2019/06/28	3748	EX3DV4	2300	Head	40.480	1.645	PASS	PASS	PASS	N/A	N/A	N/A
2450	2019/06/28	3748	EX3DV4	2450	Head	39.591	1.807	PASS	PASS	PASS	OFDM	PASS	N/A
2600	2019/06/28	3748	EX3DV4	2600	Head	39.374	1.993	PASS	PASS	PASS	TDD	PASS	N/A
5250	2019/06/28	3748	EX3DV4	5250	Head	36.480	4.751	PASS	PASS	PASS	OFDM	PASS	N/A
5600	2019/06/28	3748	EX3DV4	5600	Head	35.375	5.194	PASS	PASS	PASS	OFDM	PASS	N/A
5750	2019/06/28	3748	EX3DV4	5750	Head	35.081	5.316	PASS	PASS	PASS	OFDM	PASS	N/A
Frequency (MHz)	Date	Probe SN	Probe Type	Probe CAL Point		PERM (εr)	COND (σ)	CW Validation			MOD.Validation		
								Sensitivity	Probe Linarity	Probe Isotropy	Modulation	Duty. Factore	PAR
750	2019/10/09	3982	EX3DV4	750	Head	42.116	0.857	PASS	PASS	PASS	N/A	N/A	N/A
835	2019/10/09	3982	EX3DV4	835	Head	42.233	0.904	PASS	PASS	PASS	GMSK	PASS	N/A
1750	2019/10/09	3982	EX3DV4	1750	Head	40.251	1.375	PASS	PASS	PASS	N/A	N/A	N/A
1900	2019/10/09	3982	EX3DV4	1900	Head	40.284	1.389	PASS	PASS	PASS	GMSK	PASS	N/A
3300	2019/10/09	3982	EX3DV4	3300	Head	38.739	2.639	PASS	PASS	PASS	TDD	PASS	N/A
3500	2019/10/09	3982	EX3DV4	3500	Head	38.305	3.020	PASS	PASS	PASS	TDD	PASS	N/A
3700	2019/10/09	3982	EX3DV4	3700	Head	37.686	3.256	PASS	PASS	PASS	TDD	PASS	N/A
3900	2019/10/09	3982	EX3DV4	3900	Head	37.075	3.485	PASS	PASS	PASS	TDD	PASS	N/A
4100	2019/10/09	3982	EX3DV4	4100	Head	35.944	3.467	PASS	PASS	PASS	TDD	PASS	N/A
4400	2019/10/09	3982	EX3DV4	4400	Head	35.247	3.740	PASS	PASS	PASS	TDD	PASS	N/A
4600	2019/10/09	3982	EX3DV4	4600	Head	38.343	3.847	PASS	PASS	PASS	TDD	PASS	N/A
4800	2019/10/09	3982	EX3DV4	4800	Head	38.252	4.182	PASS	PASS	PASS	TDD	PASS	N/A
4950	2019/10/09	3982	EX3DV4	4950	Head	37.973	4.216	PASS	PASS	PASS	TDD	PASS	N/A

Frequency (MHz)	Date	Probe SN	Probe Type	Probe CAL Point		PERM (εr)	COND (σ)	CW Validation			MOD.Validation		
								Sensitivity	Probe Linarity	Probe Isotropy	Modulation	Duty. Factore	PAR
750	2019/10/28	3923	EX3DV4	750	Head	43.278	0.910	PASS	PASS	PASS	N/A	N/A	N/A
835	2019/10/28	3923	EX3DV4	835	Head	40.769	0.906	PASS	PASS	PASS	GMSK	PASS	N/A
1750	2019/10/28	3923	EX3DV4	1750	Head	40.524	1.336	PASS	PASS	PASS	N/A	N/A	N/A
1900	2019/10/28	3923	EX3DV4	1900	Head	41.235	1.418	PASS	PASS	PASS	GMSK	PASS	N/A
2000	2019/10/28	3923	EX3DV4	2000	Head	41.105	1.398	PASS	PASS	PASS	N/A	N/A	N/A
2450	2019/10/28	3923	EX3DV4	2450	Head	39.345	1.785	PASS	PASS	PASS	OFDM	PASS	N/A
2600	2019/10/28	3923	EX3DV4	2600	Head	38.713	1.996	PASS	PASS	PASS	TDD	PASS	N/A
5250	2019/10/28	3923	EX3DV4	5250	Head	36.570	4.625	PASS	PASS	PASS	OFDM	PASS	N/A
5600	2019/10/28	3923	EX3DV4	5600	Head	35.748	5.159	PASS	PASS	PASS	OFDM	PASS	N/A
5750	2019/10/28	3923	EX3DV4	5750	Head	35.384	5.309	PASS	PASS	PASS	OFDM	PASS	N/A

NOTE: While the probes have been calibrated for both CW and modulated signals, all measurements were performed using communication systems calibrated for CW signals only. Modulations in the table above represent test configurations for which the measurement system has been validated per FCC KDB Publication 865664D01 for scenarios when CW probe calibrations are used with other signal types. SAR systems were validated for modulated signals with a periodic duty cycle, such as GMSK, or with a high peak to average ratio (>5dB), such as OFDM according to KDB 865664.

Appendix B

Detailed Test Results

1. GSM
GSM850 for Head &Body
GSM1900 for Head &Body
2. WCDMA
WCDMA Band II for Head &Body
WCDMA Band IV for Head &Body
WCDMA Band V for Head &Body
3. LTE
LTE Band 2 for Head &Body
LTE Band 4 for Head &Body
LTE Band 5 for Head &Body
LTE Band 7 for Head &Body
LTE Band 38 for Head &Body
LTE Band 41 for Head &Body
4. WIFI
WIFI 2.4G for Head &Body
WIFI 5G for Head &Body
5. BT
Bluetooth for Head &Body

Date: 2020-04-24

Test Laboratory: SGS-SAR Lab

M2004J19G GSM 850 GSM 190CH Right cheek Ant1

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3

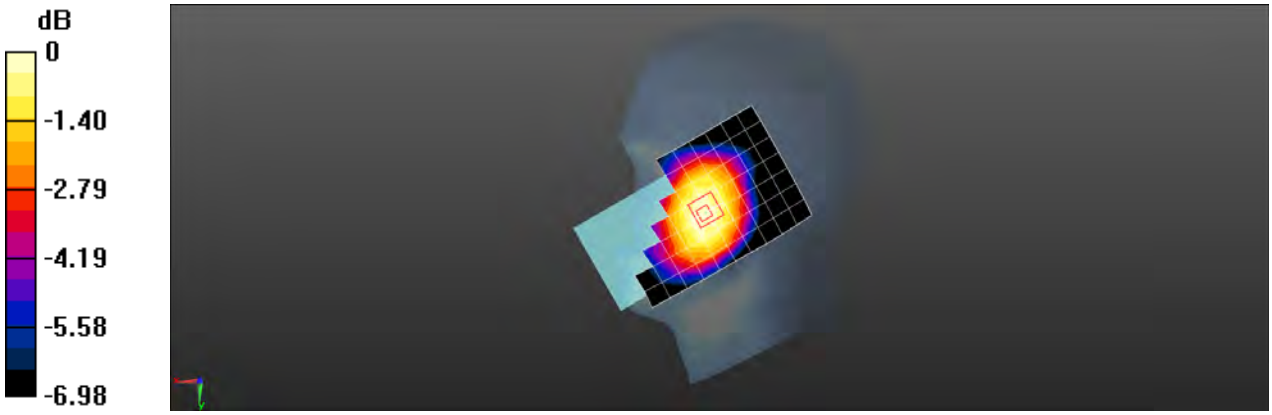
Medium: HSL835;Medium parameters used: f = 837 MHz; σ = 0.94 S/m; ε_r = 41.762; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3748; ConvF(8.76, 8.76, 8.76); Calibrated: 2019-06-19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1267; Calibrated: 2019-12-17
- Phantom: SAM 7; Type: SAM; Serial: 1027
- DASY52 4.7.80(0); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0584 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.699 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.0630 W/kg
SAR(1 g) = 0.052 W/kg; SAR(10 g) = 0.042 W/kg
Maximum value of SAR (measured) = 0.0579 W/kg



0 dB = 0.0579 W/kg = -12.37 dBW/kg

Date: 2020-04-24

Test Laboratory: SGS-SAR Lab

M2004J19G GSM 850 GSM 190CH Back side 10mm Ant1

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3

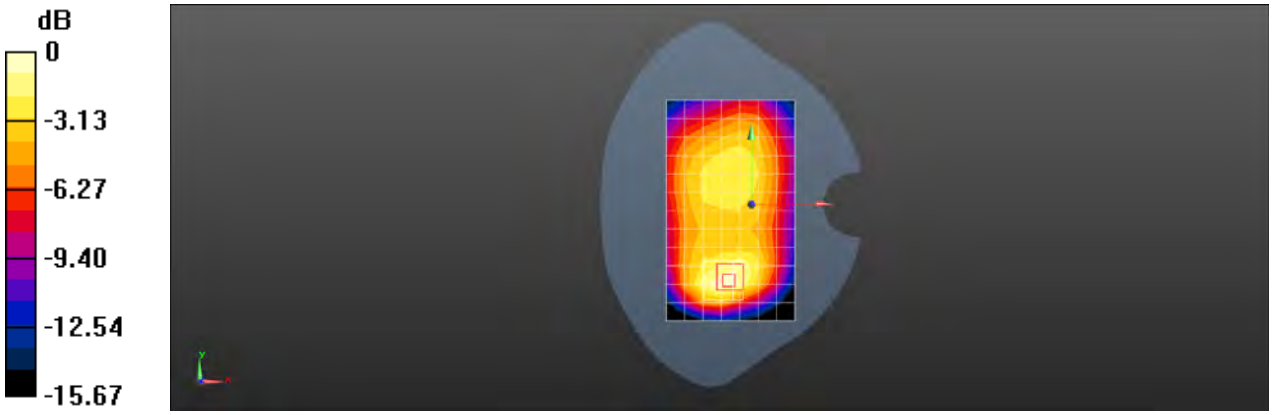
Medium: HSL835;Medium parameters used: f = 837 MHz; σ = 0.94 S/m; ε_r = 41.762; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3748; ConvF(8.76, 8.76, 8.76); Calibrated: 2019-06-19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1267; Calibrated: 2019-12-17
- Phantom: SAM 7; Type: SAM; Serial: 1027
- DASY52 4.7.80(0); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.147 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.731 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.191 W/kg
SAR(1 g) = 0.108 W/kg; SAR(10 g) = 0.064 W/kg
Maximum value of SAR (measured) = 0.148 W/kg



0 dB = 0.148 W/kg = -8.30 dBW/kg

Date: 2020-04-24

Test Laboratory: SGS-SAR Lab

M2004J19G GSM 850 GPRS 4TS 190CH Back side 10mm Ant1

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, GSM 850 4TS; Frequency: 836.6 MHz;Duty Cycle: 1:2.075

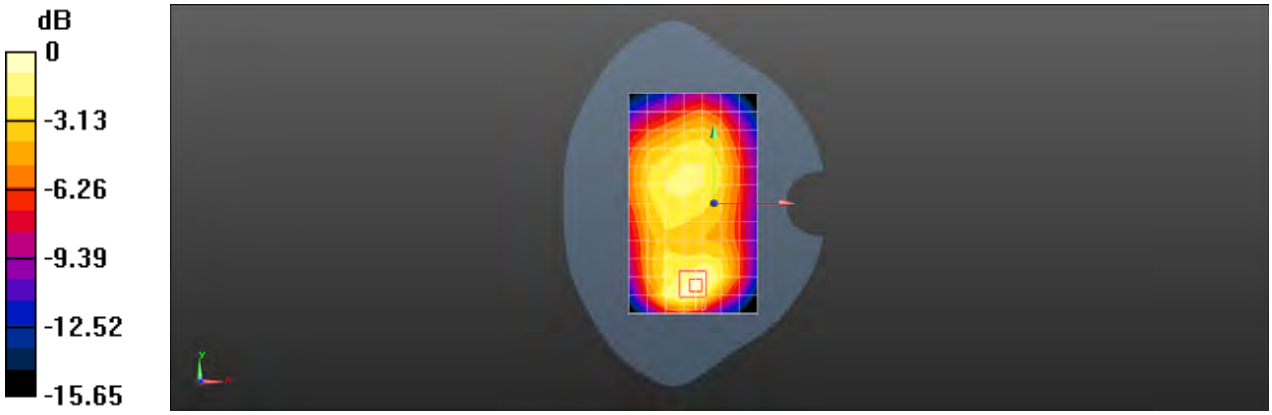
Medium: HSL835;Medium parameters used: f = 837 MHz; σ = 0.94 S/m; ε_r = 41.762; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3748; ConvF(8.76, 8.76, 8.76); Calibrated: 2019-06-19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1267; Calibrated: 2019-12-17
- Phantom: SAM 7; Type: SAM; Serial: 1027
- DASY52 4.7.80(0); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.197 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.69 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.287 W/kg
SAR(1 g) = 0.159 W/kg; SAR(10 g) = 0.093 W/kg
Maximum value of SAR (measured) = 0.215 W/kg



0 dB = 0.215 W/kg = -6.68 dBW/kg

Date: 2020-04-24

Test Laboratory: SGS-SAR Lab

M2004J19G GSM 850 GSM 190CH Right cheek Ant2

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3

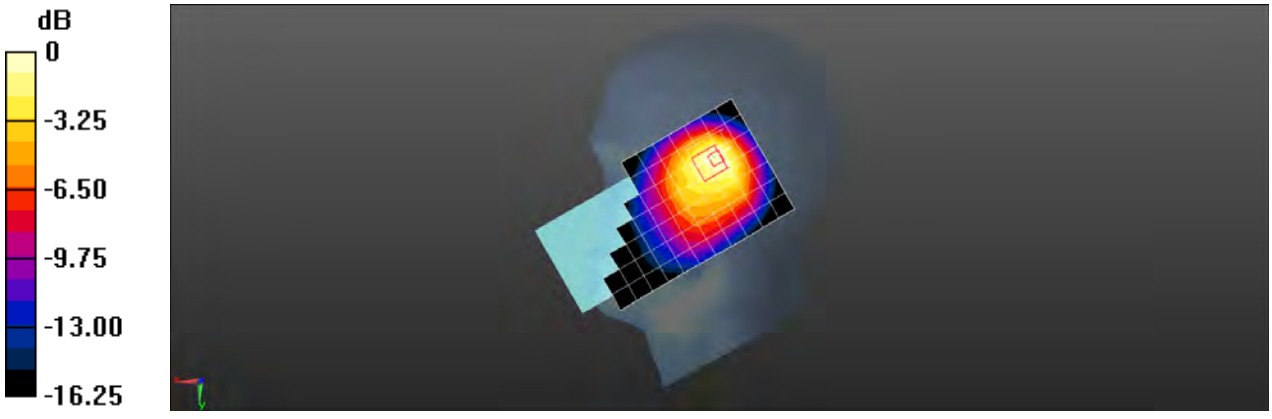
Medium: HSL835;Medium parameters used: f = 837 MHz; σ = 0.94 S/m; ε_r = 41.762; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3748; ConvF(8.76, 8.76, 8.76); Calibrated: 2019-06-19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1267; Calibrated: 2019-12-17
- Phantom: SAM 7; Type: SAM; Serial: 1027
- DASY52 4.7.80(0); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.988 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.06 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.46 W/kg
SAR(1 g) = 0.779 W/kg; SAR(10 g) = 0.472 W/kg
Maximum value of SAR (measured) = 1.05 W/kg



0 dB = 1.05 W/kg = 0.21 dBW/kg

Date: 2020-04-24

Test Laboratory: SGS-SAR Lab

M2004J19G GSM 850 GSM 190CH Back side 10mm Ant2

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3

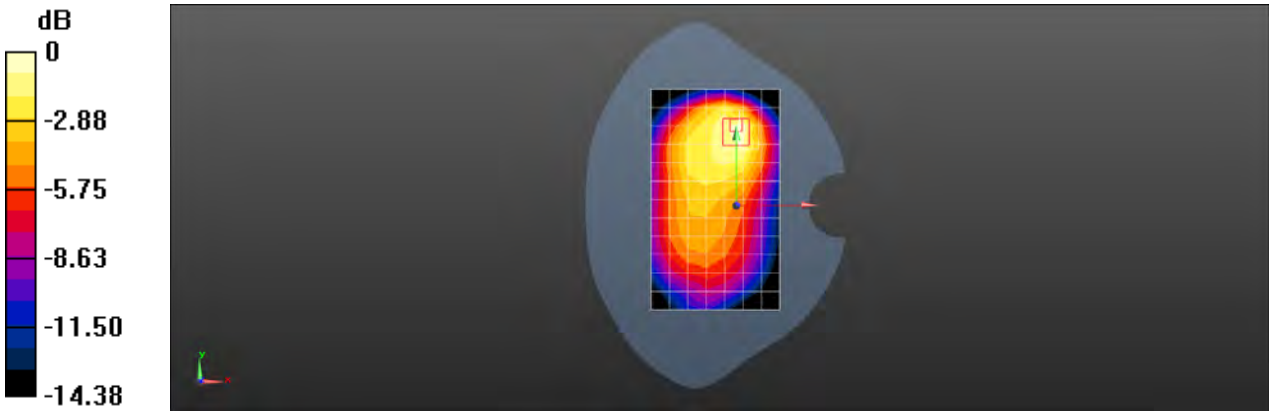
Medium: HSL835;Medium parameters used: f = 837 MHz; σ = 0.94 S/m; ε_r = 41.762; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3748; ConvF(8.76, 8.76, 8.76); Calibrated: 2019-06-19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1267; Calibrated: 2019-12-17
- Phantom: SAM 7; Type: SAM; Serial: 1027
- DASY52 4.7.80(0); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.477 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.31 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.674 W/kg
SAR(1 g) = 0.376 W/kg; SAR(10 g) = 0.226 W/kg
Maximum value of SAR (measured) = 0.501 W/kg



0 dB = 0.501 W/kg = -3.00 dBW/kg

Date: 2020-04-24

Test Laboratory: SGS-SAR Lab

M2004J19G GSM 850 GPRS 4TS 190CH Back side 10mm Ant2

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, GSM 850 4TS; Frequency: 836.6 MHz;Duty Cycle: 1:2.075

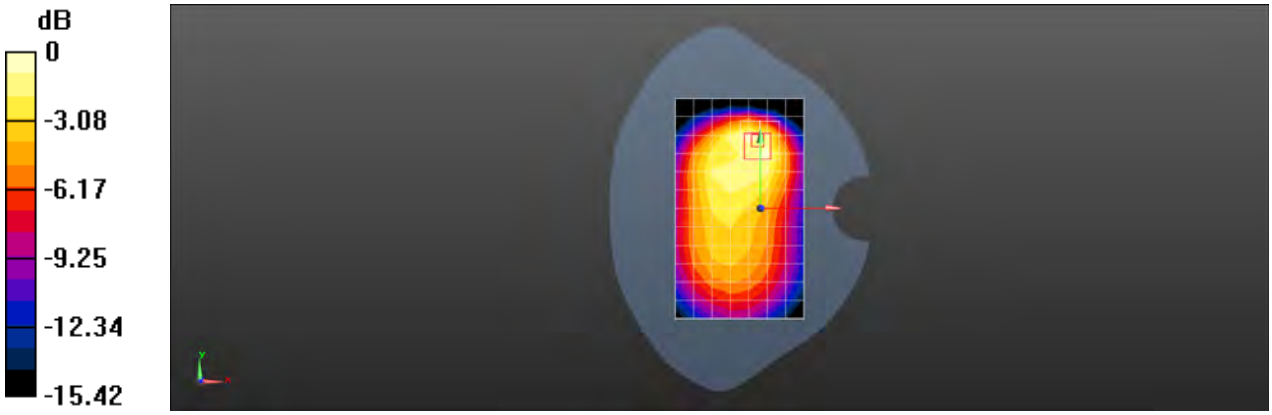
Medium: HSL835;Medium parameters used: f = 837 MHz; σ = 0.94 S/m; ε_r = 41.762; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3748; ConvF(8.76, 8.76, 8.76); Calibrated: 2019-06-19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1267; Calibrated: 2019-12-17
- Phantom: SAM 7; Type: SAM; Serial: 1027
- DASY52 4.7.80(0); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.695 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.81 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.979 W/kg
SAR(1 g) = 0.542 W/kg; SAR(10 g) = 0.323 W/kg
Maximum value of SAR (measured) = 0.759 W/kg



0 dB = 0.759 W/kg = -1.20 dBW/kg

Date: 2020-04-23

Test Laboratory: SGS-SAR Lab

M2004J19G GSM1900 GSM 661CH Right cheek

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, GSM Only Communication System (0); Frequency: 1880 MHz;Duty Cycle: 1:8.3

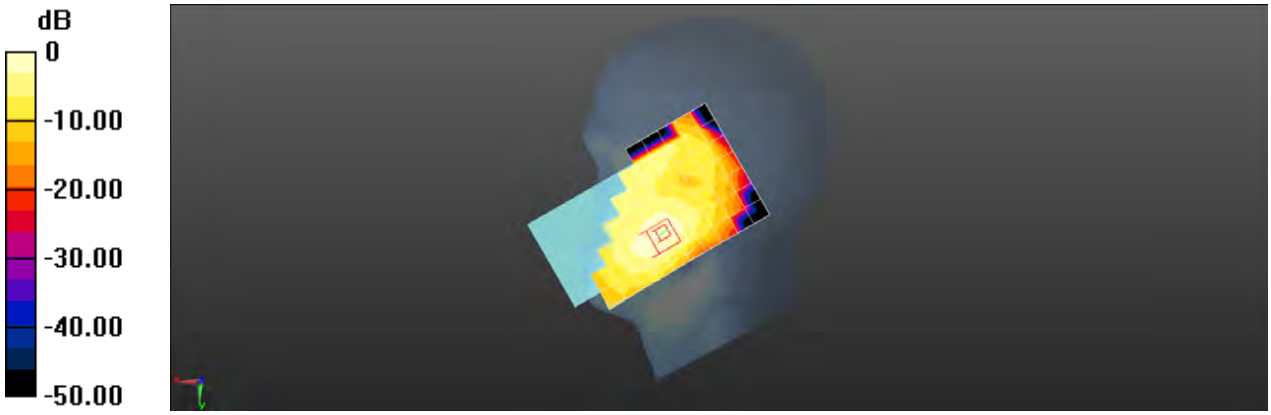
Medium: HSL1900;Medium parameters used: f = 1880 MHz; σ = 1.389 S/m; ε_r = 41.563; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3982; ConvF(8.48, 8.48, 8.48); Calibrated: 2019-09-11
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1428; Calibrated: 2020-03-03
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0816 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.237 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.102 W/kg
SAR(1 g) = 0.064 W/kg; SAR(10 g) = 0.034 W/kg
Maximum value of SAR (measured) = 0.0824 W/kg



0 dB = 0.0824 W/kg = -10.84 dBW/kg

Date: 2020-04-23

Test Laboratory: SGS-SAR Lab

M2004J19G GSM1900 GSM 661CH Back side 10mm

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, GSM Only Communication System (0); Frequency: 1880 MHz;Duty Cycle: 1:8.3

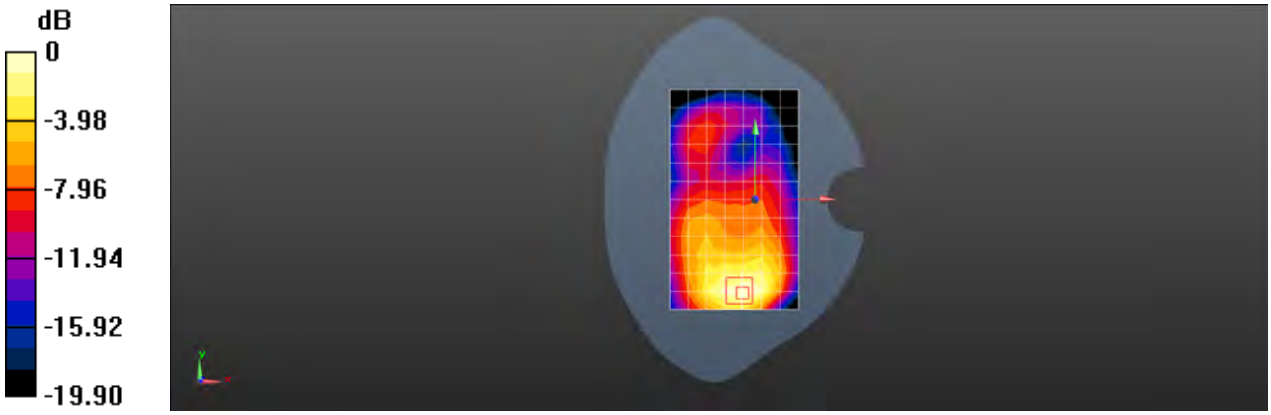
Medium: HSL1900;Medium parameters used: f = 1880 MHz; σ = 1.389 S/m; ε_r = 41.563; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3982; ConvF(8.48, 8.48, 8.48); Calibrated: 2019-09-11
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1428; Calibrated: 2020-03-03
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.412 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.055 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.524 W/kg
SAR(1 g) = 0.302 W/kg; SAR(10 g) = 0.168 W/kg
Maximum value of SAR (measured) = 0.401 W/kg



0 dB = 0.401 W/kg = -3.97 dBW/kg

Date: 2020-04-23

Test Laboratory: SGS-SAR Lab

M2004J19G GSM1900 GPRS 4TS 661CH Bottom side 10mm

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, GPRS/EGPRS Mode(4up) Communication System (0); Frequency: 1880 MHz;Duty Cycle: 1:2.075

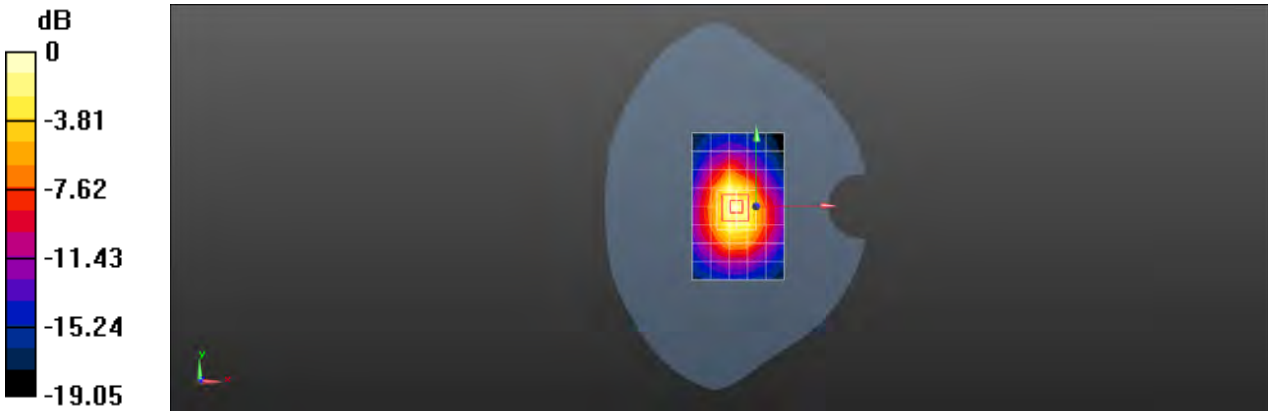
Medium: HSL1900;Medium parameters used: f = 1880 MHz; σ = 1.389 S/m; ε_r = 41.563; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3982; ConvF(8.48, 8.48, 8.48); Calibrated: 2019-09-11
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1428; Calibrated: 2020-03-03
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.935 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.01 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.37 W/kg
SAR(1 g) = 0.792 W/kg; SAR(10 g) = 0.435 W/kg
Maximum value of SAR (measured) = 1.08 W/kg



0 dB = 1.08 W/kg = 0.33 dBW/kg

Date: 2020-04-23

Test Laboratory: SGS-SAR Lab

M2004J19G WCDMA Band II 9400CH Left tilted

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, WCDMA (0); Frequency: 1880 MHz;Duty Cycle: 1:1

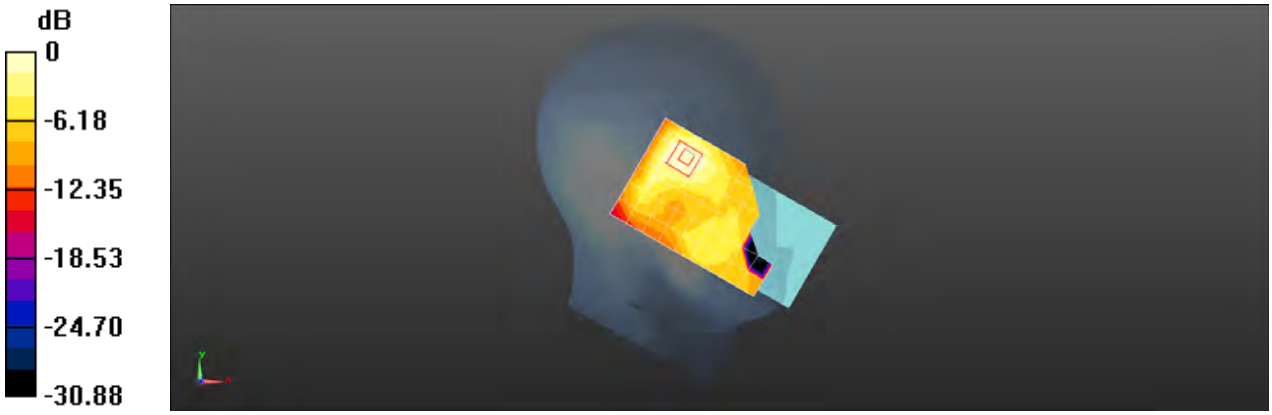
Medium: HSL1900;Medium parameters used: f = 1880 MHz; σ = 1.389 S/m; ε_r = 41.563; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3982; ConvF(8.48, 8.48, 8.48); Calibrated: 2019-09-11
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1428; Calibrated: 2020-03-03
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.139 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.729 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.167 W/kg
SAR(1 g) = 0.109 W/kg; SAR(10 g) = 0.065 W/kg
Maximum value of SAR (measured) = 0.135 W/kg



0 dB = 0.135 W/kg = -8.70 dBW/kg

Date: 2020-04-23

Test Laboratory: SGS-SAR Lab

M2004J19G WCDMA Band II 9400CH Back side 10mm

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, WCDMA (0); Frequency: 1880 MHz;Duty Cycle: 1:1

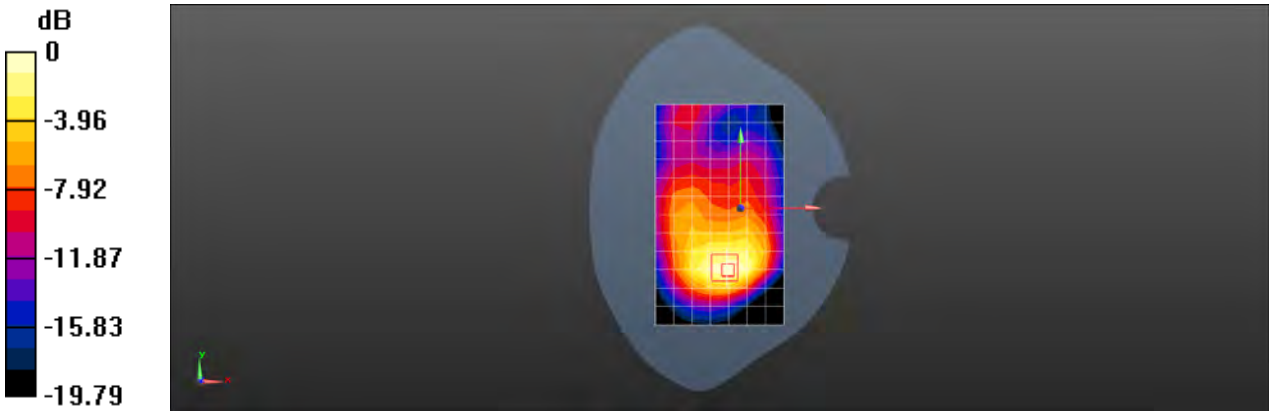
Medium: HSL1900;Medium parameters used: f = 1880 MHz; σ = 1.389 S/m; ε_r = 41.563; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3982; ConvF(8.48, 8.48, 8.48); Calibrated: 2019-09-11
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1428; Calibrated: 2020-03-03
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.972 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.349 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.20 W/kg
SAR(1 g) = 0.695 W/kg; SAR(10 g) = 0.387 W/kg
Maximum value of SAR (measured) = 0.941 W/kg



0 dB = 0.941 W/kg = -0.26 dBW/kg

Date: 2020-04-22

Test Laboratory: SGS-SAR Lab

M2004J19G WCDMA Band IV 1412CH Left cheek

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, WCDMA (0); Frequency: 1732.4 MHz;Duty Cycle: 1:1

Medium: HSL1750;Medium parameters used (interpolated): f = 1732.4 MHz; σ = 1.312 S/m; ε_r = 39.629; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3982; ConvF(8.8, 8.8, 8.8); Calibrated: 2019-09-11
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1428; Calibrated: 2020-03-03
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0781 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.590 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.0950 W/kg
SAR(1 g) = 0.081 W/kg; SAR(10 g) = 0.037 W/kg
Maximum value of SAR (measured) = 0.0789 W/kg

0 dB = 0.0789 W/kg = -11.03 dBW/kg

Date: 2020-04-22

Test Laboratory: SGS-SAR Lab

M2004J19G WCDMA Band IV 1513CH Back side 10mm

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, WCDMA (0); Frequency: 1752.6 MHz;Duty Cycle: 1:1

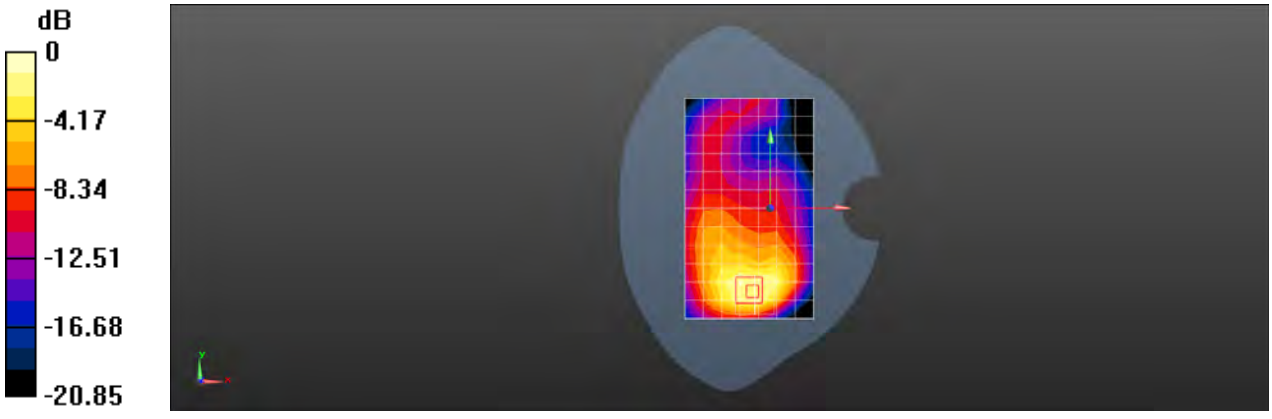
Medium: HSL1750;Medium parameters used: f = 1753 MHz; σ = 1.397 S/m; ε_r = 40.653; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3982; ConvF(8.8, 8.8, 8.8); Calibrated: 2019-09-11
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1428; Calibrated: 2020-03-03
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.877 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.628 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.49 W/kg
SAR(1 g) = 0.872 W/kg; SAR(10 g) = 0.481 W/kg
Maximum value of SAR (measured) = 1.17 W/kg



0 dB = 1.17 W/kg = 0.68 dBW/kg

Date: 2020-04-24

Test Laboratory: SGS-SAR Lab

M2004J19G WCDMA Band V 4182CH Right cheek Ant1

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, WCDMA Band V; Frequency: 836.4 MHz;Duty Cycle: 1:1

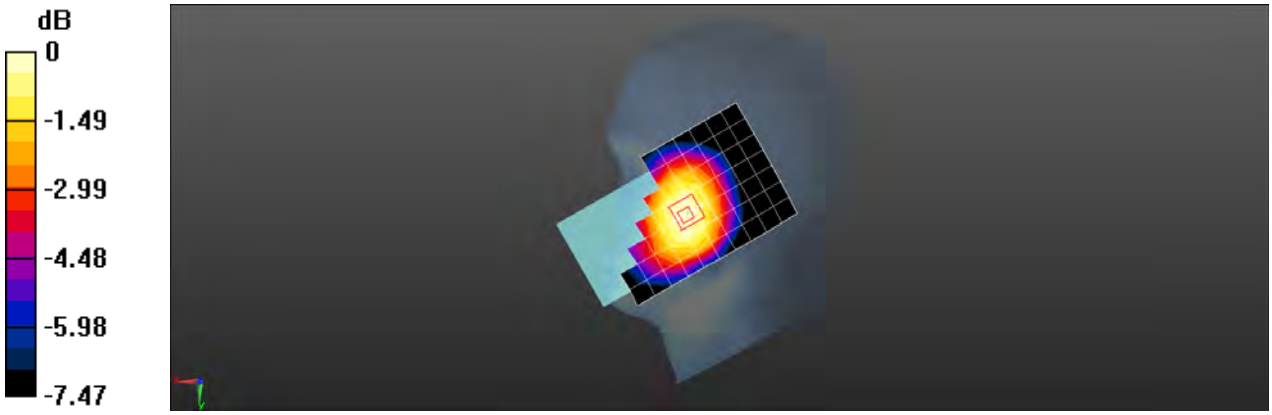
Medium: HSL835;Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.923 S/m; ε_r = 43.313; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3748; ConvF(8.76, 8.76, 8.76); Calibrated: 2019-06-19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1267; Calibrated: 2019-12-17
- Phantom: SAM 7; Type: SAM; Serial: 1027
- DASY52 4.7.80(0); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0920 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.737 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.104 W/kg
SAR(1 g) = 0.085 W/kg; SAR(10 g) = 0.068 W/kg
Maximum value of SAR (measured) = 0.0955 W/kg



0 dB = 0.0955 W/kg = -10.20 dBW/kg

Date: 2020-04-24

Test Laboratory: SGS-SAR Lab

M2004J19G WCDMA Band V 4182CH Back side 10mm Ant1

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, WCDMA Band V; Frequency: 836.4 MHz;Duty Cycle: 1:1

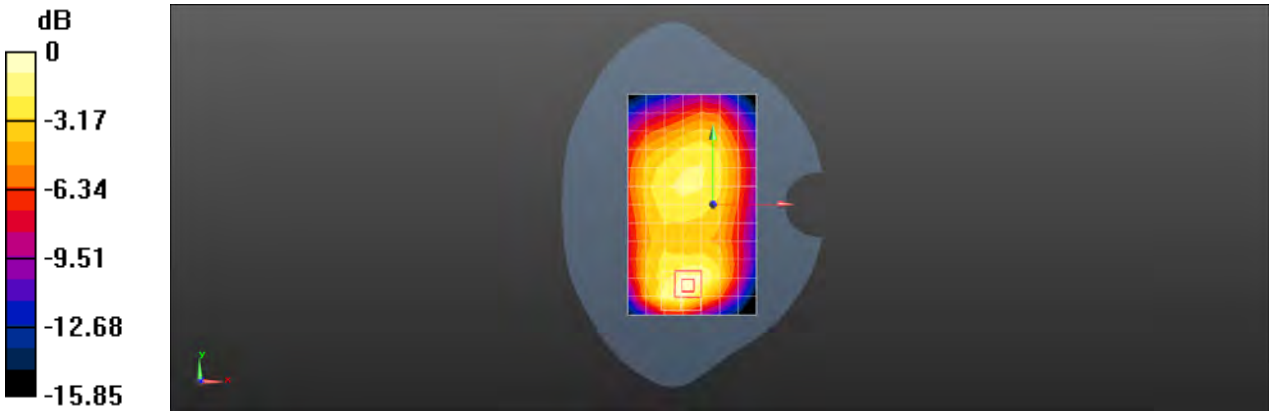
Medium: HSL835;Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.923 S/m; ε_r = 43.313; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3748; ConvF(8.76, 8.76, 8.76); Calibrated: 2019-06-19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1267; Calibrated: 2019-12-17
- Phantom: SAM 7; Type: SAM; Serial: 1027
- DASY52 4.7.80(0); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.192 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.25 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.291 W/kg
SAR(1 g) = 0.164 W/kg; SAR(10 g) = 0.097 W/kg
Maximum value of SAR (measured) = 0.220 W/kg



0 dB = 0.220 W/kg = -6.58 dBW/kg

Date: 2020-04-24

Test Laboratory: SGS-SAR Lab

M2004J19G WCDMA Band V 4182CH Right cheek Ant2

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, WCDMA Band V; Frequency: 836.4 MHz;Duty Cycle: 1:1

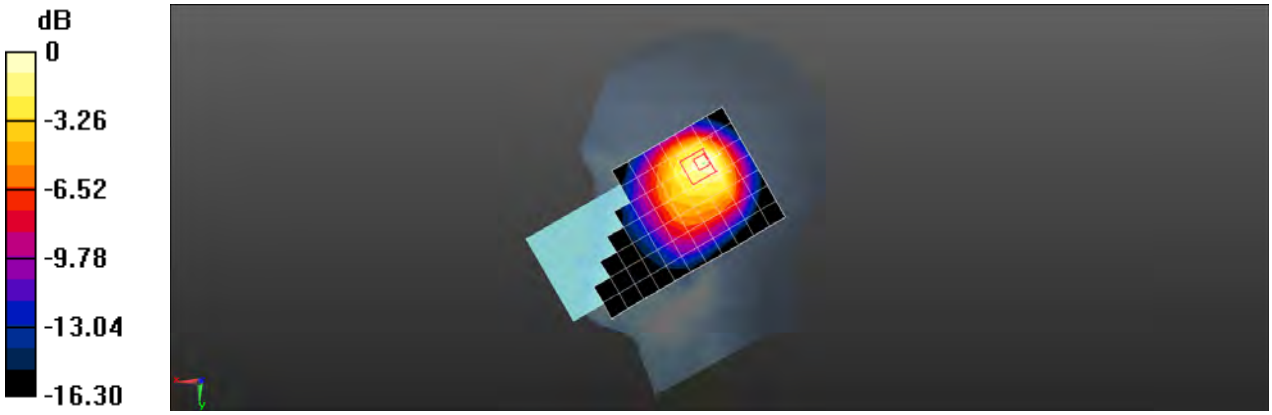
Medium: HSL835;Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.94 S/m; ε_r = 41.767; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3748; ConvF(8.76, 8.76, 8.76); Calibrated: 2019-06-19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1267; Calibrated: 2019-12-17
- Phantom: SAM 7; Type: SAM; Serial: 1027
- DASY52 4.7.80(0); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.03 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.58 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.39 W/kg
SAR(1 g) = 0.761 W/kg; SAR(10 g) = 0.454 W/kg
Maximum value of SAR (measured) = 1.04 W/kg



0 dB = 1.04 W/kg = 0.17 dBW/kg

Date: 2020-04-24

Test Laboratory: SGS-SAR Lab

M2004J19G WCDMA Band V 4182CH Back side 10mm Ant2

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, WCDMA Band V; Frequency: 836.4 MHz;Duty Cycle: 1:1

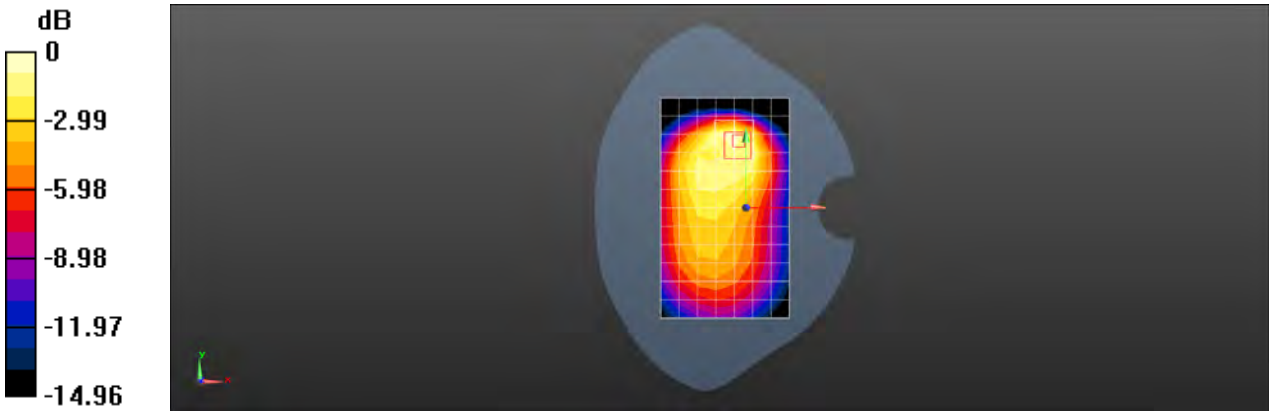
Medium: HSL835;Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.923 S/m; ε_r = 43.313; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3748; ConvF(8.76, 8.76, 8.76); Calibrated: 2019-06-19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1267; Calibrated: 2019-12-17
- Phantom: SAM 7; Type: SAM; Serial: 1027
- DASY52 4.7.80(0); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.526 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.61 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.734 W/kg
SAR(1 g) = 0.402 W/kg; SAR(10 g) = 0.239 W/kg
Maximum value of SAR (measured) = 0.537 W/kg



0 dB = 0.537 W/kg = -2.70 dBW/kg

Date: 2020-04-23

Test Laboratory: SGS-SAR Lab

M2004J19G LTE Band 2 20M QPSK 1RB50 18900CH Right cheek

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, LTE-FDD BW 20MHz (0); Frequency: 1880 MHz;Duty Cycle: 1:1

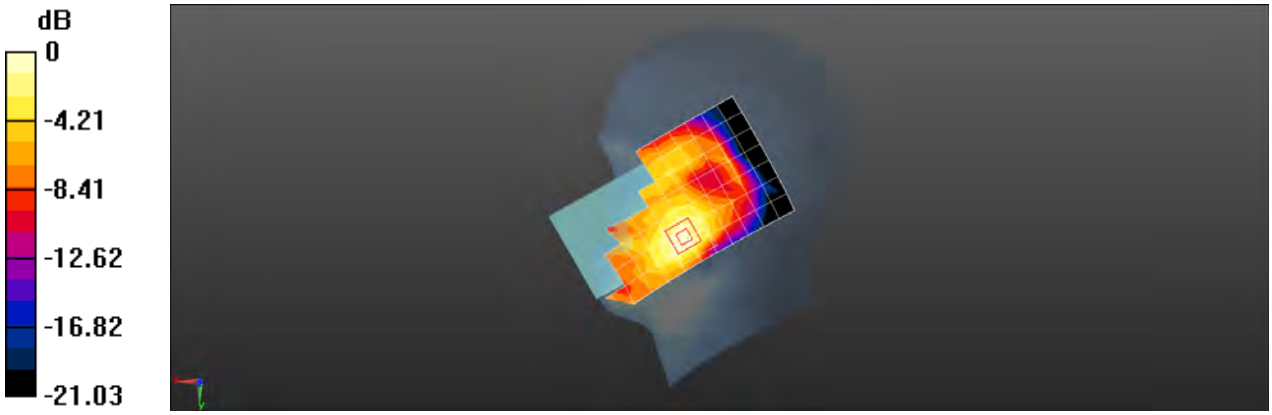
Medium: HSL1900;Medium parameters used: f = 1880 MHz; σ = 1.389 S/m; ε_r = 41.563; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3982; ConvF(8.48, 8.48, 8.48); Calibrated: 2019-09-11
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1428; Calibrated: 2020-03-03
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.127 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.541 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.183 W/kg
SAR(1 g) = 0.116 W/kg; SAR(10 g) = 0.070 W/kg
Maximum value of SAR (measured) = 0.149 W/kg



0 dB = 0.149 W/kg = -8.27 dBW/kg

Date: 2020-04-23

Test Laboratory: SGS-SAR Lab

M2004J19G LTE Band 2 20M QPSK 1RB50 18900CH Back side 10mm

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, LTE-FDD BW 20MHz (0); Frequency: 1880 MHz;Duty Cycle: 1:1

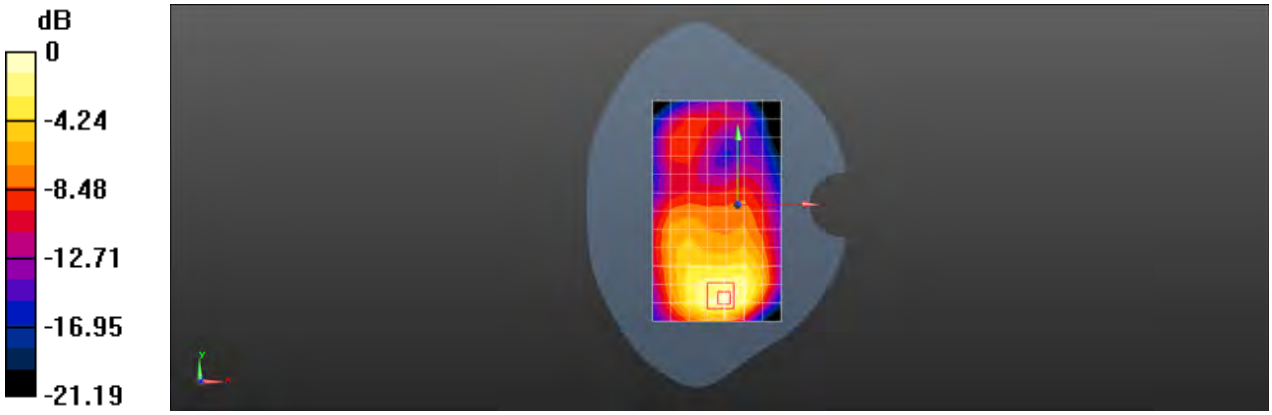
Medium: HSL1900;Medium parameters used: f = 1880 MHz; σ = 1.389 S/m; ε_r = 41.563; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3982; ConvF(8.48, 8.48, 8.48); Calibrated: 2019-09-11
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1428; Calibrated: 2020-03-03
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.715 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.113 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.953 W/kg
SAR(1 g) = 0.553 W/kg; SAR(10 g) = 0.311 W/kg
Maximum value of SAR (measured) = 0.767 W/kg



0 dB = 0.767 W/kg = -1.15 dBW/kg

Date: 2020-04-23

Test Laboratory: SGS-SAR Lab

M2004J19G LTE Band 2 20M QPSK 1RB50 18900CH Bottom side 10mm

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, LTE-FDD BW 20MHz (0); Frequency: 1880 MHz;Duty Cycle: 1:1

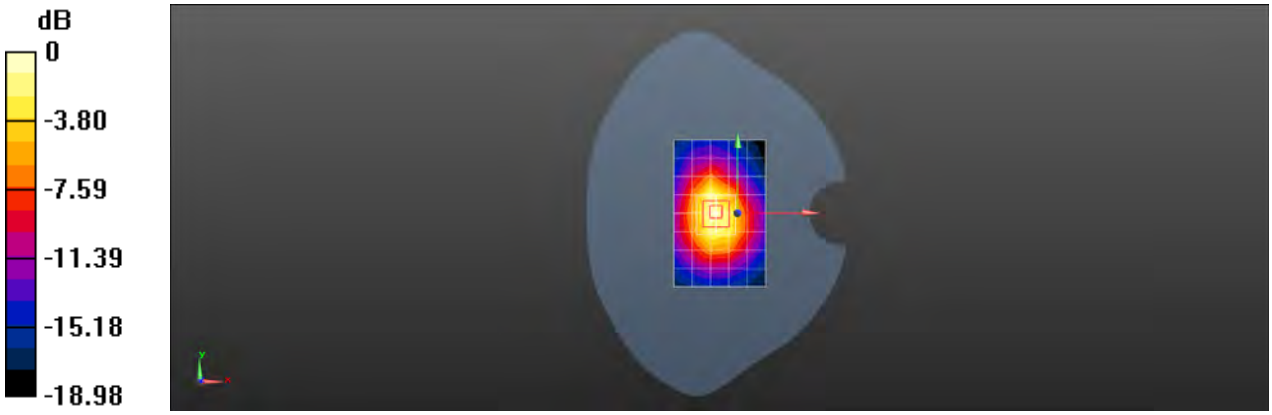
Medium: HSL1900;Medium parameters used: f = 1880 MHz; σ = 1.389 S/m; ε_r = 41.563; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3982; ConvF(8.48, 8.48, 8.48); Calibrated: 2019-09-11
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1428; Calibrated: 2020-03-03
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.829 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.22 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.16 W/kg
SAR(1 g) = 0.669 W/kg; SAR(10 g) = 0.367 W/kg
Maximum value of SAR (measured) = 0.912 W/kg



0 dB = 0.912 W/kg = -0.40 dBW/kg

Date: 2020-04-22

Test Laboratory: SGS-SAR Lab

M2004J19G LTE Band 4 20M QPSK 1RB50 20175CH Right cheek

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, LTE-FDD BW 20MHz (0); Frequency: 1732.5 MHz;Duty Cycle: 1:1

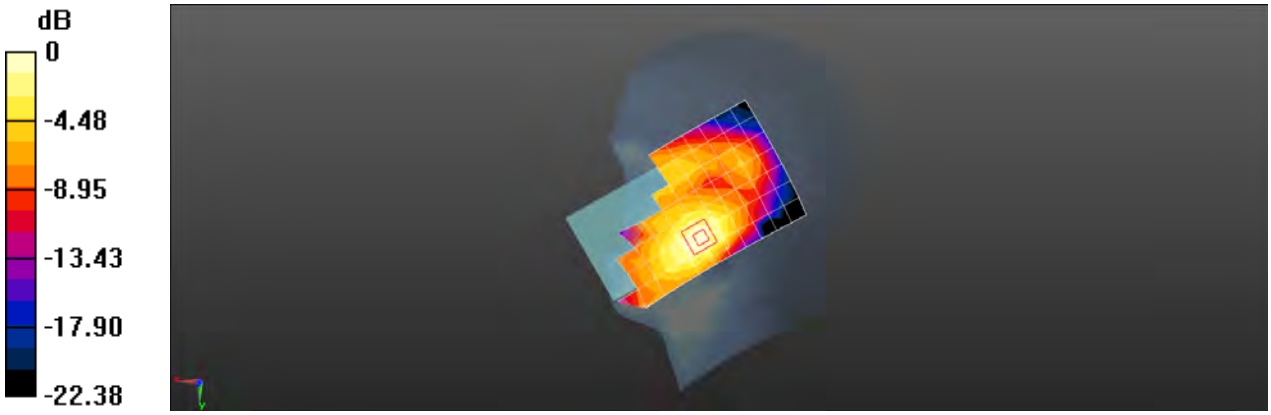
Medium: HSL1750;Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.312 S/m; ε_r = 39.629; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3982; ConvF(8.8, 8.8, 8.8); Calibrated: 2019-09-11
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1428; Calibrated: 2020-03-03
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0848 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.953 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.114 W/kg
SAR(1 g) = 0.074 W/kg; SAR(10 g) = 0.045 W/kg
Maximum value of SAR (measured) = 0.0960 W/kg



0 dB = 0.0960 W/kg = -10.18 dBW/kg

Date: 2020-04-22

Test Laboratory: SGS-SAR Lab

M2004J19G LTE Band 4 20M QPSK 1RB50 20300CH Back side 10mm

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, LTE-FDD BW 20MHz (0); Frequency: 1745 MHz;Duty Cycle: 1:1

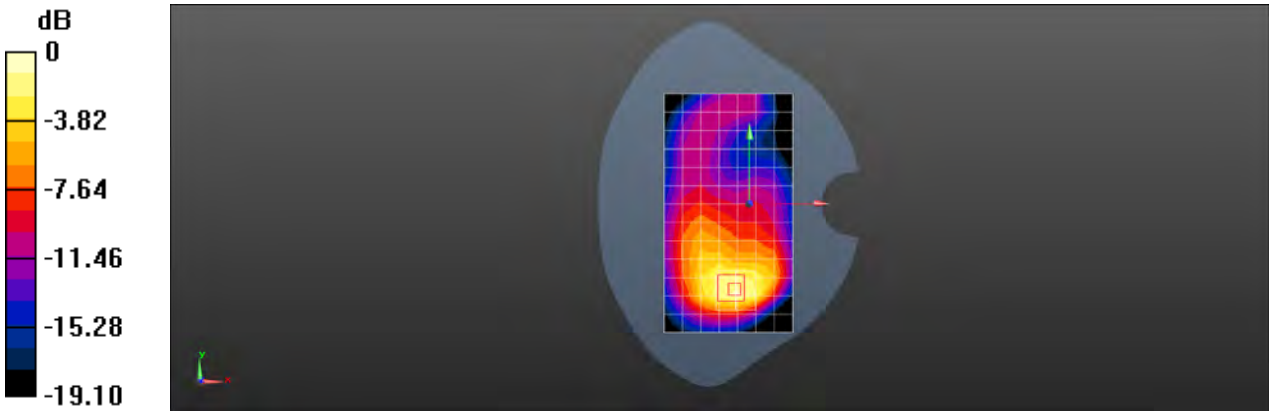
Medium: HSL1750;Medium parameters used: f = 1745 MHz; σ = 1.325 S/m; ε_r = 39.59; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3982; ConvF(8.8, 8.8, 8.8); Calibrated: 2019-09-11
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1428; Calibrated: 2020-03-03
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.784 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.651 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 1.12 W/kg
SAR(1 g) = 0.664 W/kg; SAR(10 g) = 0.369 W/kg
Maximum value of SAR (measured) = 0.918 W/kg



0 dB = 0.918 W/kg = -0.37 dBW/kg

Date: 2020-04-23

Test Laboratory: SGS-SAR Lab

M2004J19G LTE Band 5 10M QPSK 1RB25 20450CH Right cheek Ant1

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, LTE-FDD BW 10MHZ (0); Frequency: 829 MHz;Duty Cycle: 1:1

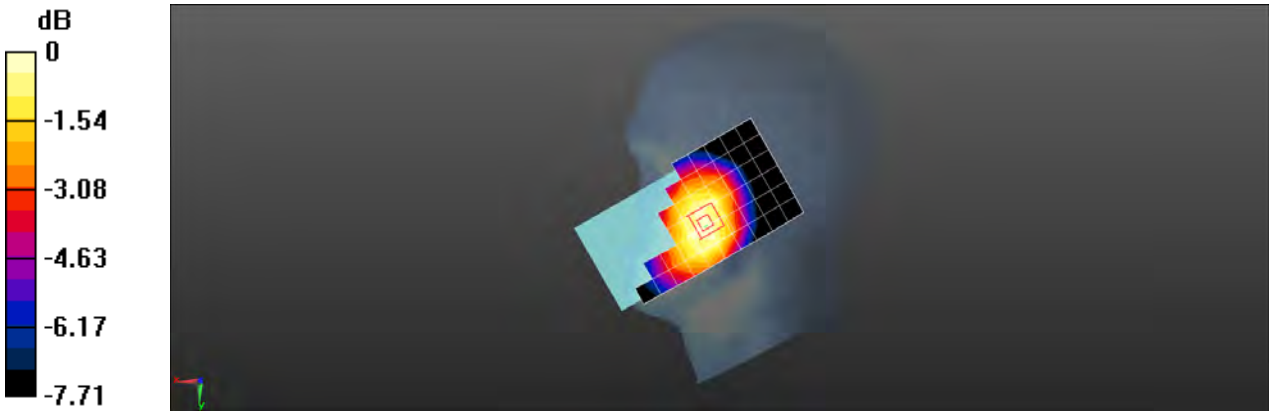
Medium: HSL835;Medium parameters used: f = 829 MHz; σ = 0.935 S/m; ε_r = 42.18; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3748; ConvF(8.76, 8.76, 8.76); Calibrated: 2019-06-19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1267; Calibrated: 2019-12-17
- Phantom: SAM 7; Type: SAM; Serial: 1027
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0970 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.604 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.106 W/kg
SAR(1 g) = 0.072 W/kg; SAR(10 g) = 0.048 W/kg
Maximum value of SAR (measured) = 0.0971 W/kg



0 dB = 0.0971 W/kg = -10.13 dBW/kg

Date: 2020-04-23

Test Laboratory: SGS-SAR Lab

M2004J19G LTE Band 5 10M QPSK 1RB25 20600CH Back side 10mm Ant1

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, LTE Band 5 10MHz; Frequency: 844 MHz;Duty Cycle: 1:1

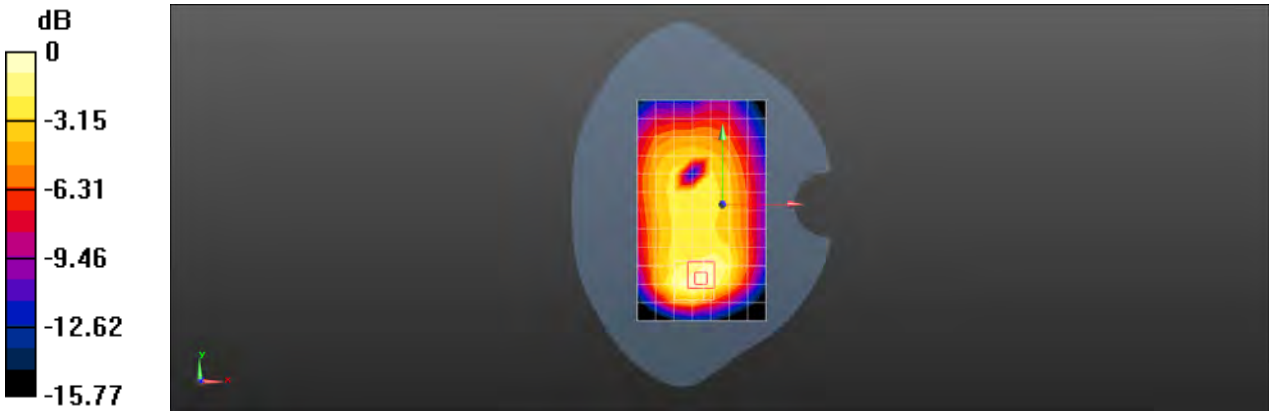
Medium: HSL835;Medium parameters used: f = 844 MHz; σ = 0.945 S/m; ε_r = 42.091; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3748; ConvF(8.76, 8.76, 8.76); Calibrated: 2019-06-19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1267; Calibrated: 2019-12-17
- Phantom: SAM 7; Type: SAM; Serial: 1027
- DASY52 4.7.80(0); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.240 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.68 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 0.320 W/kg
SAR(1 g) = 0.179 W/kg; SAR(10 g) = 0.107 W/kg
Maximum value of SAR (measured) = 0.243 W/kg



0 dB = 0.243 W/kg = -6.14 dBW/kg

Date: 2020-04-23

Test Laboratory: SGS-SAR Lab

M2004J19G LTE Band 5 10M QPSK 100RB0 20450CH Right cheek Ant2

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, LTE Band 5 10MHz; Frequency: 829 MHz;Duty Cycle: 1:1

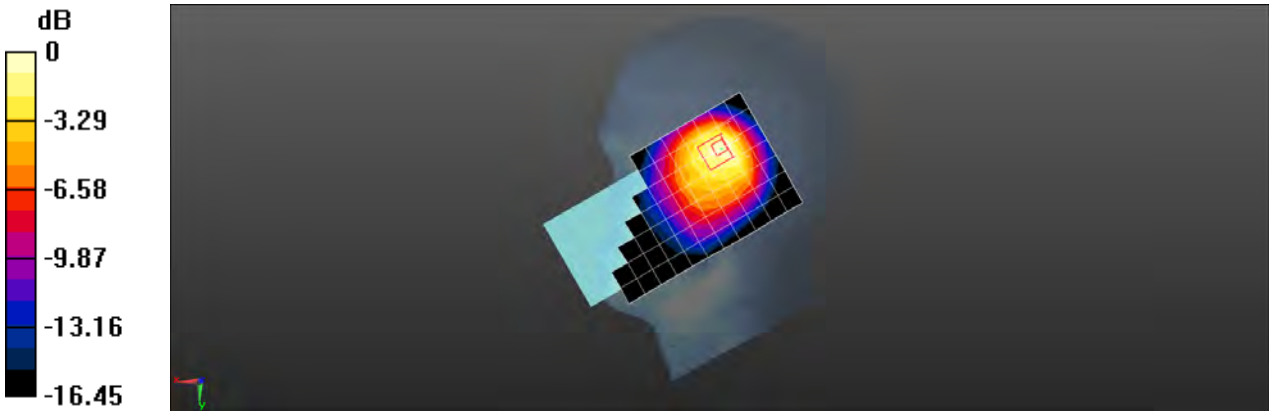
Medium: HSL835;Medium parameters used: f = 829 MHz; σ = 0.935 S/m; ε_r = 42.18; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3748; ConvF(8.76, 8.76, 8.76); Calibrated: 2019-06-19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1267; Calibrated: 2019-12-17
- Phantom: SAM 7; Type: SAM; Serial: 1027
- DASY52 4.7.80(0); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.891 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.79 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.22 W/kg
SAR(1 g) = 0.609 W/kg; SAR(10 g) = 0.385 W/kg
Maximum value of SAR (measured) = 0.920 W/kg



0 dB = 0.920 W/kg = -0.36 dBW/kg

Date: 2020-04-23

Test Laboratory: SGS-SAR Lab

M2004J19G LTE Band 5 10M QPSK 1RB25 20525CH Back side 10mm Ant2

DUT: M2004J19G; Type: Mobile Phone; Serial: 860951040034962/78

Communication System: UID 0, LTE Band 5 10MHz; Frequency: 836.5 MHz;Duty Cycle: 1:1

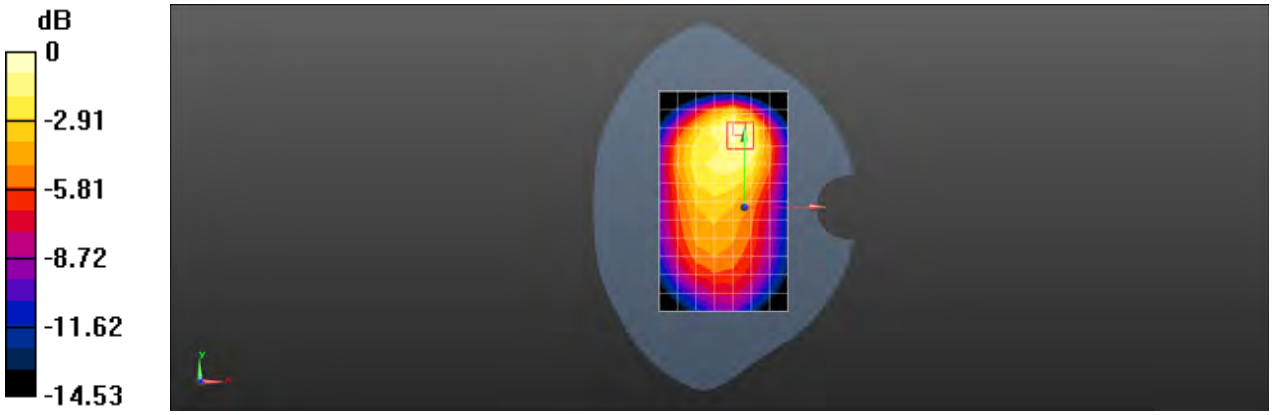
Medium: HSL835;Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.94 S/m; ε_r = 42.132; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3748; ConvF(8.76, 8.76, 8.76); Calibrated: 2019-06-19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1267; Calibrated: 2019-12-17
- Phantom: SAM 7; Type: SAM; Serial: 1027
- DASY52 4.7.80(0); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.494 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.02 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.707 W/kg
SAR(1 g) = 0.389 W/kg; SAR(10 g) = 0.232 W/kg
Maximum value of SAR (measured) = 0.520 W/kg



0 dB = 0.520 W/kg = -2.84 dBW/kg

Date: 2020-04-28

Test Laboratory: SGS-SAR Lab

M2004J19G LTE Band 7 20M QPSK 1RB50 21350CH Left cheek

DUT: M2004J19G ; Type: Mobile Phone; Serial: 860951040027768/78

Communication System: UID 0, LTE-FDD BW 20MHz (0); Frequency: 2560 MHz;Duty Cycle: 1:1

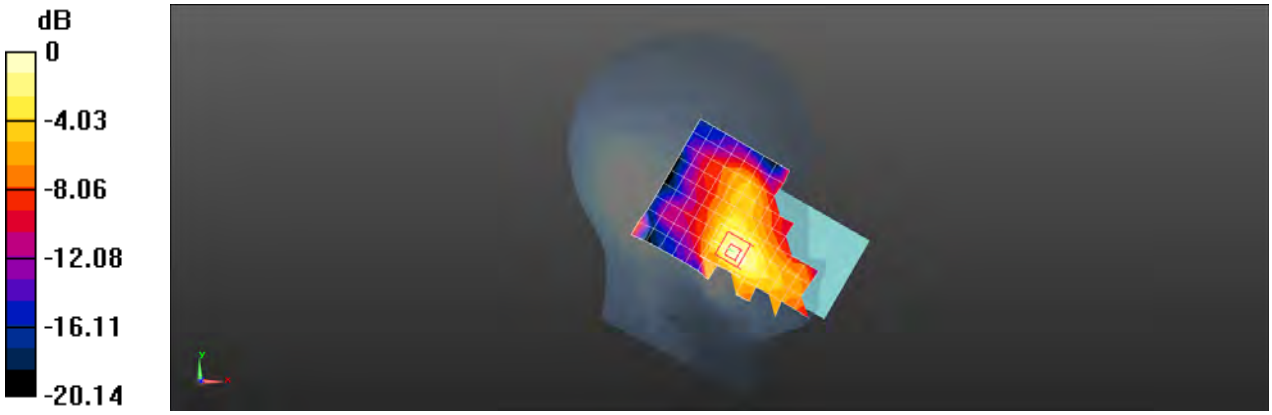
Medium: HSL2600;Medium parameters used: f = 2560 MHz; σ = 1.948 S/m; ε_r = 40.326; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.74, 7.74, 7.74); Calibrated: 2019-10-22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2019-09-18
- Phantom: SAM 2; Type: SAM; Serial: 1913
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (10x16x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.350 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.101 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.481 W/kg
SAR(1 g) = 0.261 W/kg; SAR(10 g) = 0.138 W/kg
Maximum value of SAR (measured) = 0.366 W/kg



0 dB = 0.366 W/kg = -4.37 dBW/kg