



FCC SAR TEST REPORT

Report No: HR/2020/80004
Applicant: Asiatelco Technologies Inc.
Manufacturer: Asiatelco Technologies Inc.
Product Name: Athena Phone
Model No.(EUT): FR150
Trade Mark: R3Di
FCC ID: 2AXKS-FR150
Standards: FCC 47CFR §2.1093
Date of Receipt: 2020-08-09
Date of Test: 2020-08-10 to 2020-09-27
Date of Issue: 2020-10-01
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.



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REVISION HISTORY

Report Number	Revision	Description	Issue Date
HR/2020/8000408	01	Original	2020-10-01



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TEST SUMMARY

Frequency Band	Maximum Reported SAR(W/kg)		
	Head	Body-worn	Hotspot
GSM850	0.33	0.42	0.67
GSM1900	0.14	0.48	1.18
WCDMA Band II	0.86	1.08	1.27
WCDMA Band IV	0.18	1.03	1.03
WCDMA Band V	0.79	0.67	0.89
CDMA BC0	0.61	0.61	0.97
CDMA BC1	0.81	0.86	0.86
CDMA BC10	0.54	0.25	0.39
LTE Band 2	0.59	0.74	1.31
LTE Band 4	0.23	0.59	1.39
LTE Band 5	0.40	0.86	1.10
LTE Band 12	0.46	0.99	1.19
LTE Band 13	0.72	0.87	0.99
LTE Band 25	0.56	0.70	1.23
LTE Band 26	0.46	0.78	0.84
LTE Band 41	0.21	0.42	1.31
LTE Band 66	0.23	0.75	1.09
LTE Band 71	<0.10	0.14	0.23
WLAN 2.4G	0.21	0.11	0.19
BT	/	/	/
SAR Limited(W/kg)	1.6		
Maximum Simultaneous Transmission SAR (W/kg)			
Scenario	Head	Body-worn	Hotspot
Sum SAR	1.19	1.19	1.57
SPLSR	N/A	N/A	N/A
SPLSR Limited	0.04		

Approved & Released by

Simon Ling

Simon Ling

SAR Manager

Tested by

Jackson Li

Jackson Li

SAR Engineer



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1 General Information

1.1 Details of Client

Applicant:	Asiatelco Technologies Inc.
Address:	4611 Teller Avenue, Suite 110, Newport Beach, CA 92660, USA
Manufacturer:	Asiatelco Technologies Inc.
Address:	4611 Teller Avenue, Suite 110, Newport Beach, CA 92660, USA

1.2 Test Location

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

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

- **CNAS (No. CNAS L2929)**

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

- **A2LA (Certificate No. 3816.01)**

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

- **VCCI**

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- **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.



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1.4 General Description of EUT

Product Name:	Athena Phone		
Model No.(EUT):	FR150		
Trade Mark:	R3Di		
Device Type :	portable device		
Exposure Category:	uncontrolled environment / general population		
Product Phase:	production unit		
FCC ID:	2AXKS-FR150		
SN:	354783970000322/354783970000587/354783970000108/354783970000025		
Hardware Version:	B1		
Software Version:	QC28A-FR150-01418_V01-08_07.24.2020_FCC_i-B1		
Antenna Type:	Inner Antenna		
Device Operating Configurations :			
Modulation Mode:	GSM: GMSK, 8PSK; WCDMA: QPSK; CDMA: QPSK; LTE: QPSK,16QAM; WIFI: DSSS, OFDM; BT: GFSK, π/4DQPSK,8DPSK;		
Device Class:	B		
GPRS Multi-slots Class:	33	EGPRS Multi-slots Class:	33
HSDPA UE Category:	14	HSUPA UE Category	6
DC-HSDPA UE Category:	24		
Power Class	4,tested with power level 5(GSM850)		
	1,tested with power level 0(GSM1900)		
	3, tested with power control “all 1”(WCDMA Band II/IV/V)		
	3, tested with power control “all up”(CDMA BC0/1/10)		
	3, tested with power control Max Power(LTE Band 2/4/5/12/13/25/26/41/66/71)		
Frequency Bands:	Band	Tx (MHz)	Rx (MHz)
	GSM850	824~849	869~894
	GSM1900	1850~1910	1930~1990
	WCDMA Band II	1850~1910	1930~1990
	WCDMA Band IV	1710~1755	2110~2155
	WCDMA Band V	824~849	869~894
	CDMA BC0	824~849	869~894
	CDMA BC1	1850~1910	1930~1990
	CDMA BC10	817~824	862~869
	LTE Band 2	1850 ~1910	1930 ~1990
	LTE Band 4	1710~1755	2110~2155
	LTE Band 5	824~849	869~894
	LTE Band 12	699~716	729~746
	LTE Band 13	777~787	746~756
	LTE Band 25	1850~1915	1930~1995
	LTE Band 26	814~849	859~894
	LTE Band 41	2496~2690	2496~2690
	LTE Band 66	1710~1780	2110~2200
	LTE Band 71	663~698	617~652
	WIFI 2.4G	2412~2462	2412~2462
	Bluetooth	2402~2480	2402~2480
Battery Information:	Model:	BL1438	
	Normal Voltage:	+3.8V	
	Rated capacity:	1600mAh	
	Manufacturer:	ZHONGSHAN TIANMAO BATTERY CO.,LTD.	



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1.4.1 DUT Antenna Locations(Back View with cover closed)

Reference Appendix photos

Note:

- 1) SAR Proximity sensor location is same as main Ant.
- 2) The test device is a smart phone. The overall diagonal dimension of this device is 118 mm.
- 3) The div Antenna does not support transmitter function.



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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 (cover closed)							
Mode	Exposure Condition	Front	Back	Left	Right	Top	Bottom
Main Ant	Hotspot	Yes	Yes	Yes	Yes	No	Yes
WIFI 2.4G/BT	Hotspot	Yes	Yes	No	Yes	Yes	No
EUT Sides for SAR Testing (cover opened)							
Mode	Exposure Condition	Front	Back	Left	Right	Top	Bottom
Main Ant	Hotspot	Yes	Yes	Yes	Yes	No	Yes
WIFI 2.4G/BT	Hotspot	Yes	Yes	No	Yes	No	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) For Hotspot exposure of cover opened, the test case was considered each half of surface separately due to fold angle. And only keypad part was considered about SAR test because Display part has not any antennas.



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1.4.2 Power reduction specification

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

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

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

Main antenna Power Reduction Level Amount (dBm)									
Power Reduction Scenario	WCDMA Band II	WCDMA Band IV	CDMA BC1	LTE Band 2	LTE Band 4	LTE Band 25	LTE Band 41(class 2)	LTE Band 41(class 3)	LTE Band 66
Sensor off	25.0	24.0	24.8	24.0	24.0	24.0	26.5	24.0	25.0
Sensor on	22.0	21.0	20.8	22.5	22.5	22.5	21.5	19.0	22.0



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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 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



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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.)



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2 Laboratory Environment

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

Table 2: The Ambient Conditions



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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 $SAR = \sigma (|E|/2) / \rho$ where σ and ρ are the conductivity and mass density of the tissue-Simulate.

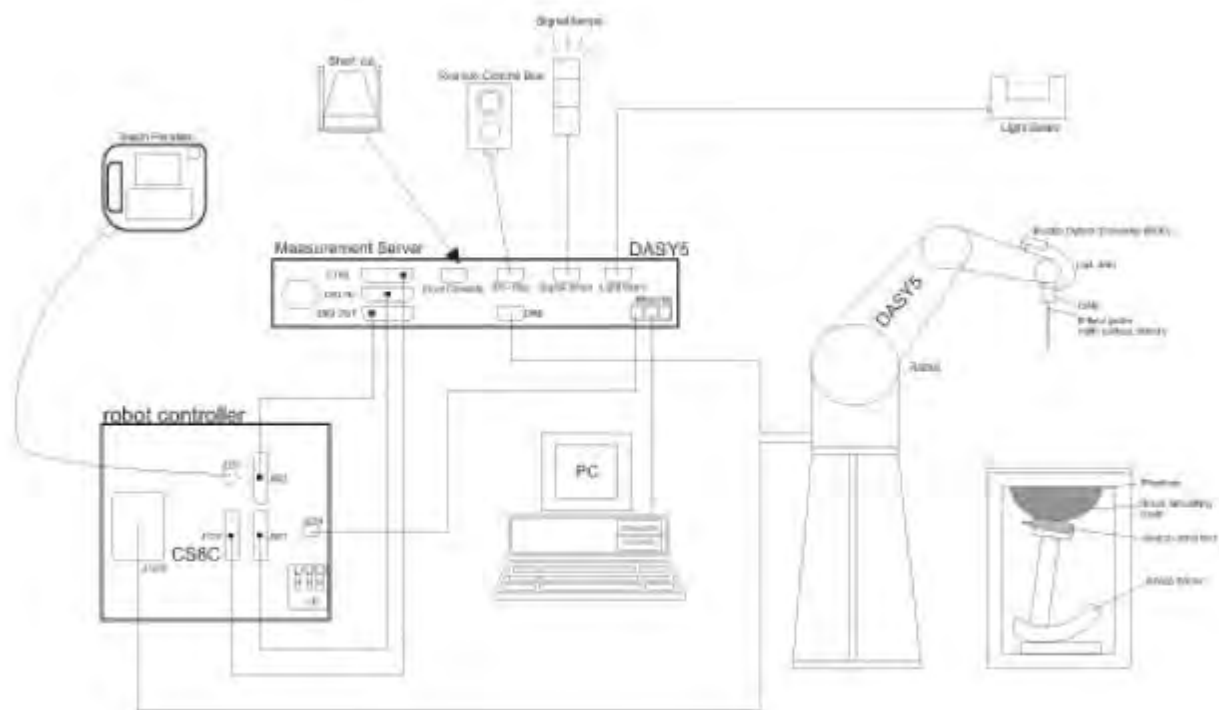
The DASY5 system for performing compliance tests consists of the following items:

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



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- 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 μ W/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μ W/g)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); 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.



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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 $\epsilon=3$ and loss tangent $\delta=0.02$. 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 ($f \leq 2\text{GHz}$), 30mm*30mm*30mm (f for 2-3GHz) and 24mm*24mm*22mm (f for 5-6GHz) was assessed by measuring 5x5x7 points ($f \leq 2\text{GHz}$), 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.



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		$\leq 3 \text{ GHz}$	$> 3 \text{ GHz}$
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface		$5 \pm 1 \text{ mm}$	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5 \text{ mm}$
Maximum probe angle from probe axis to phantom surface normal at the measurement location		$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area}	$\leq 2 \text{ GHz: } \leq 15 \text{ mm}$ $2 - 3 \text{ GHz: } \leq 12 \text{ mm}$		$3 - 4 \text{ GHz: } \leq 12 \text{ mm}$ $4 - 6 \text{ GHz: } \leq 10 \text{ mm}$
	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 $\leq$ 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}		$\leq 2 \text{ GHz: } \leq 8 \text{ mm}$ $2 - 3 \text{ GHz: } \leq 5 \text{ mm}^*$	$3 - 4 \text{ GHz: } \leq 5 \text{ mm}^*$ $4 - 6 \text{ GHz: } \leq 4 \text{ mm}^*$
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		$3 - 4 \text{ GHz: } \leq 4 \text{ mm}$ $4 - 5 \text{ GHz: } \leq 3 \text{ mm}$ $5 - 6 \text{ GHz: } \leq 2 \text{ mm}$
	graded grid	$\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface	$3 - 4 \text{ GHz: } \leq 3 \text{ mm}$ $4 - 5 \text{ GHz: } \leq 2.5 \text{ mm}$ $5 - 6 \text{ GHz: } \leq 2 \text{ mm}$
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$
Minimum zoom scan volume	x, y, z	$\geq 30 \text{ mm}$	$3 - 4 \text{ GHz: } \geq 28 \text{ mm}$ $4 - 5 \text{ GHz: } \geq 25 \text{ mm}$ $5 - 6 \text{ GHz: } \geq 22 \text{ mm}$

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. $\pm 5 \%$



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

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

E-field probes:

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



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H-field probes:

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

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

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

ConvF = sensitivity enhancement in solution

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

f = carrier frequency [GHz]

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

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

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

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

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

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

with SAR = local specific absorption rate in mW/g

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

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

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.

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

with P_{pwe} = equivalent power density of a plane wave in mW/cm²

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

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



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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 ($\sim 10\%$ 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

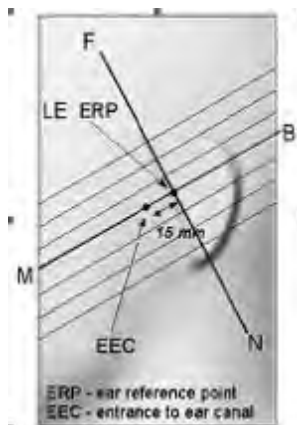


F-3. Front, back, and side views of SAM (model for the phantom shell). Full-head model is for illustration purposes only-procedures in this recommended practice are intended primarily for the phantom setup.

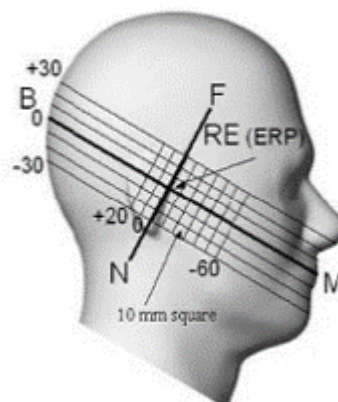
Note: The centre strip including the nose region has a different thickness tolerance.



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

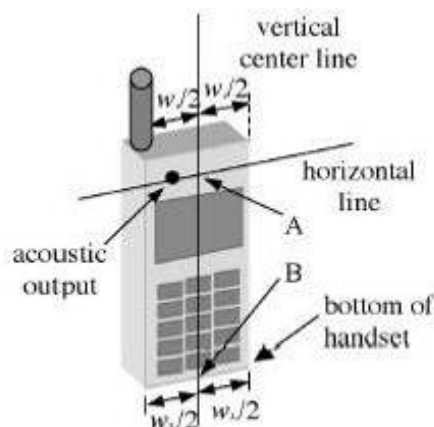


F-5. Close-up side view of phantom, showing the ear region, N-F and B-M lines, and seven cross-sectional plane locations

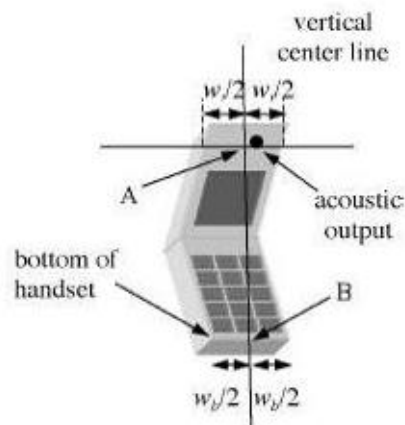


F-6. Side view of the phantom showing relevant markings and seven cross-sectional plane locations

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

- 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.
- 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.



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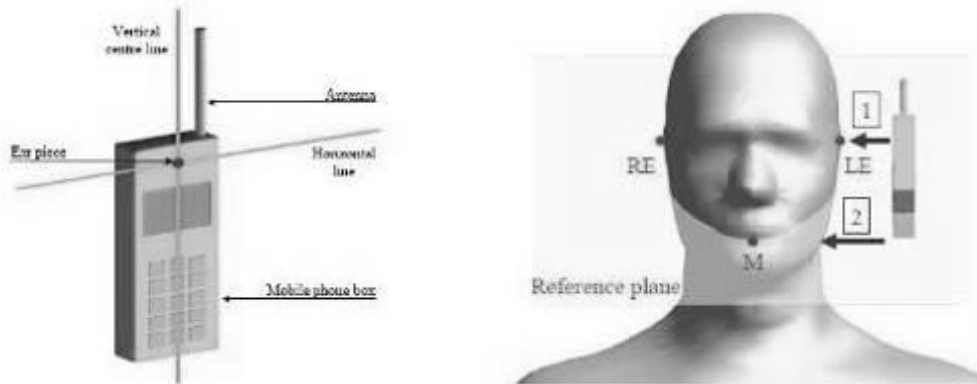
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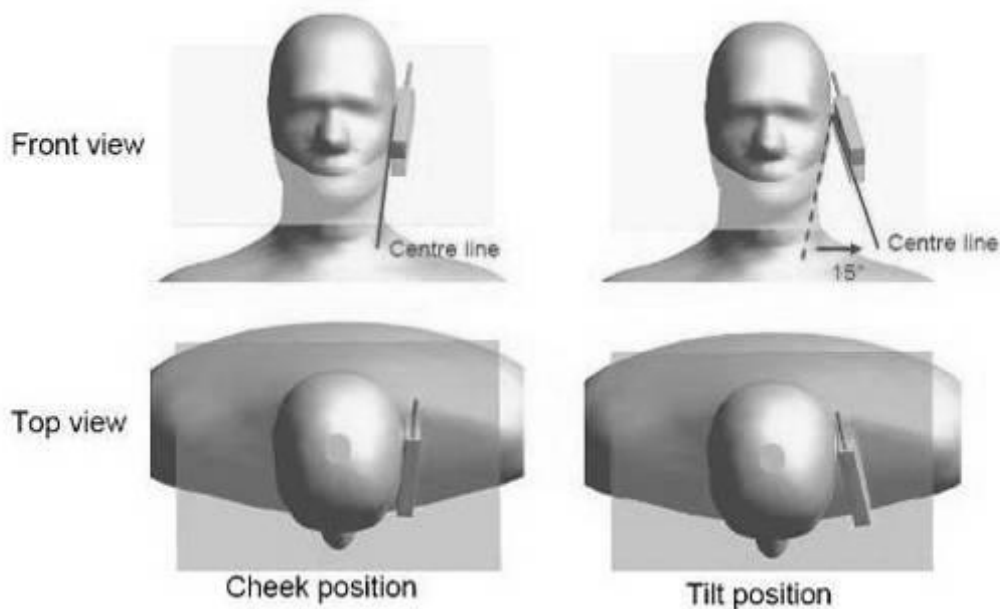
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5.1.4 Definition of the “tilted” position

- Position the device in the “cheek” position described above;
- 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

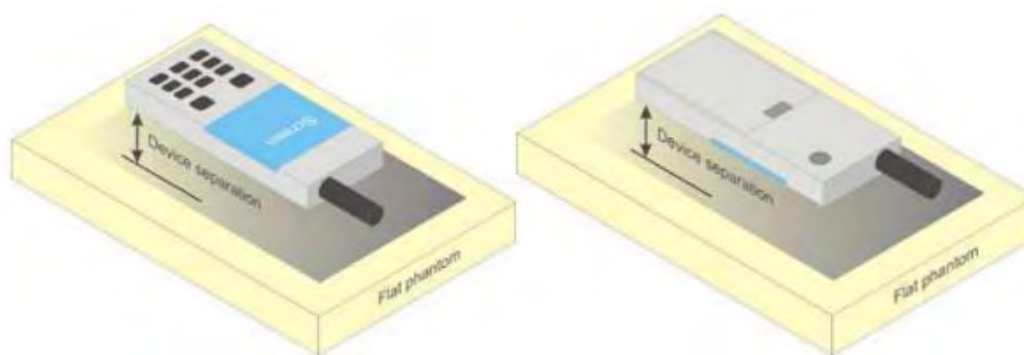
5.2.1 Body-worn accessory exposure conditions

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 $> 1.2 \text{ W/kg}$, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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 ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) 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 $9 \text{ cm} \times 5 \text{ cm}$, 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 $> 15.0 \text{ cm}$ or an overall diagonal dimension $> 16.0 \text{ cm}$ 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 $\leq 25 \text{ mm}$ 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 $> 1.2 \text{ W/kg}$; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.

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



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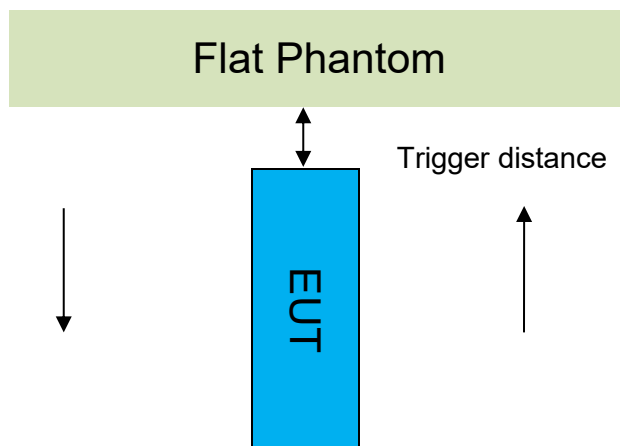
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5.1 Proximity Sensor Triggering Test

Proximity sensor triggering distances:

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



Proximity Sensor Triggering Distance(mm)					
Position	Front side	Back side	Left side	Right side	Bottom side
Minimum	20	20	20	20	20
Required SAR Test	19	19	19	19	19

Band	Sensor Trigger Distance	Power reduction (dB)
WCDMA Band II	Front side: 20mm Back side: 20mm Left side: 20mm Right side: 20mm Bottom side: 20mm	3.0
WCDMA Band IV	Front side: 20mm Back side: 20mm Left side: 20mm Right side: 20mm Bottom side: 20mm	3.0
CDMA BC1	Front side: 20mm Back side: 20mm Left side: 20mm Right side: 20mm Bottom side: 20mm	4.0
LTE Band 2	Front side: 20mm Back side: 20mm Left side: 20mm Right side: 20mm Bottom side: 20mm	1.5



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LTE Band 4	Front side: 20mm Back side: 20mm Left side: 20mm Right side: 20mm Bottom side: 20mm	1.5
LTE Band 25	Front side: 20mm Back side: 20mm Left side: 20mm Right side: 20mm Bottom side: 20mm	1.5
LTE Band 41(class 2)	Front side: 20mm Back side: 20mm Left side: 20mm Right side: 20mm Bottom side: 20mm	5.0
LTE Band 41(class 3)	Front side: 20mm Back side: 20mm Left side: 20mm Right side: 20mm Bottom side: 20mm	5.0
LTE Band 66	Front side: 20mm Back side: 20mm Left side: 20mm Right side: 20mm Bottom side: 20mm	3.0

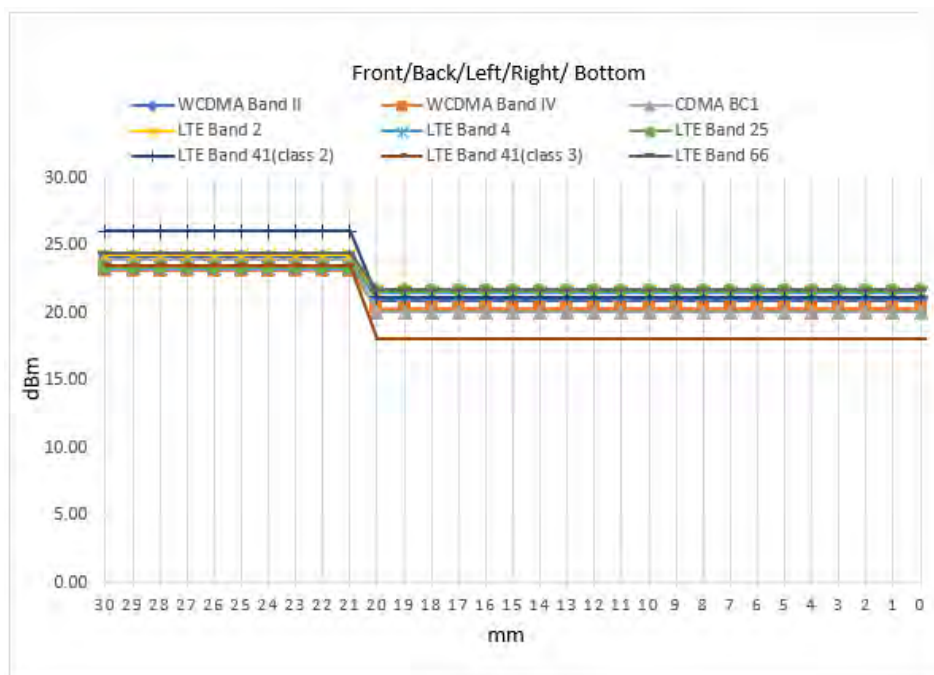
Note: SAR tests with proximity sensor power reduction are only required for the sides of frequency bands in the table above. For the other sides or other frequency bands of the device, SAR is still tested at the maximum power level with sensor off.



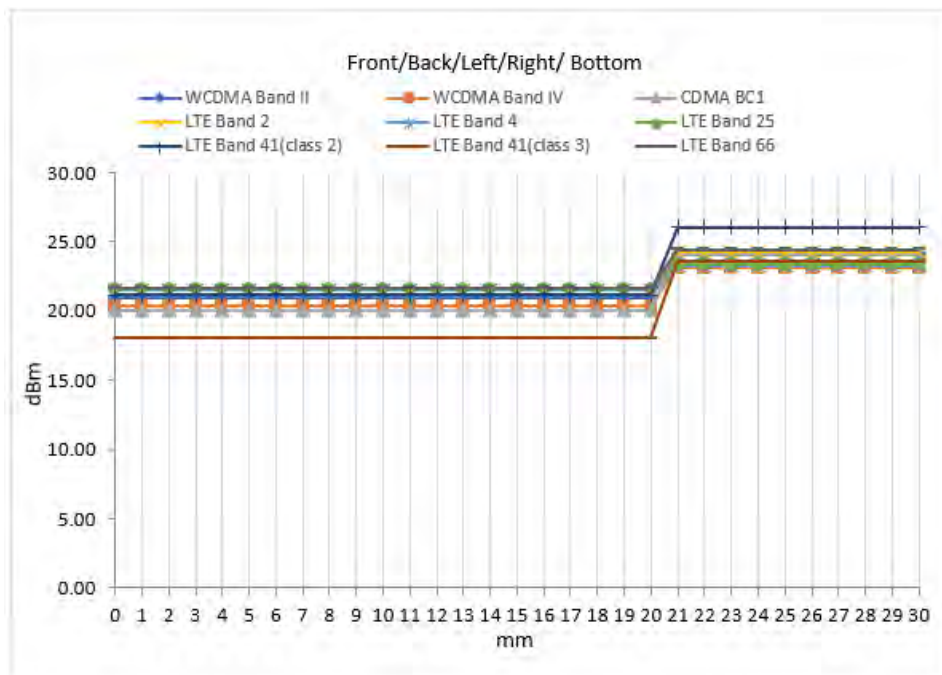
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● DUT Moving Toward(Trigger)the Phantom



● DUT Moving Away(Release) from the Phantom



Proximity sensor coverage

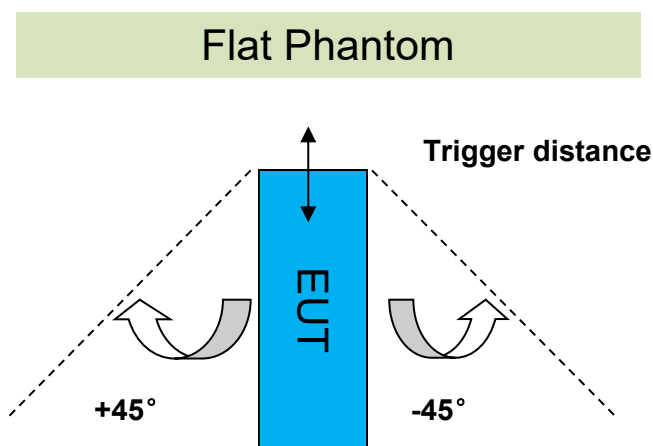
If a sensor is spatially offset from the antenna(s), it is necessary to verify sensor triggering for conditions where the antenna is next to the user but the sensor is laterally further away to ensure sensor coverage is sufficient for reducing the power to maintain compliance. For p-sensor coverage testing,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

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

Device tilt angle influences to proximity sensor triggering

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

Rotating the tablet around the edge next to the phantom in $\leq 10^\circ$ increments until the tablet is $\pm 45^\circ$ 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

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	Left side: 20mm Right side: 20mm Bottom side: 20mm	Left side: 20mm Right side: 20mm Bottom side: 20mm	on	on	on	on	on	on	on	on	on	on	on
WCDMA Band IV	Left side: 20mm Right side: 20mm Bottom side: 20mm	Left side: 20mm Right side: 20mm Bottom side: 20mm	on	on	on	on	on	on	on	on	on	on	on
CDMA BC1	Left side: 20mm Right side: 20mm Bottom side: 20mm	Left side: 20mm Right side: 20mm Bottom side: 20mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 2	Left side: 20mm Right side: 20mm Bottom side: 20mm	Left side: 20mm Right side: 20mm Bottom side: 20mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 4	Left side: 20mm Right side: 20mm Bottom side: 20mm	Left side: 20mm Right side: 20mm Bottom side: 20mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 25	Left side: 20mm	Left side: 20mm	on	on	on	on	on	on	on	on	on	on	on



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	Right side: 20mm Bottom side: 20mm	Right side: 20mm Bottom side: 20mm												
LTE Band 41 (Class 2)	Left side: 20mm Right side: 20mm Bottom side: 20mm	Left side: 20mm Right side: 20mm Bottom side: 20mm	on	on	on	on	on	on	on	on	on	on	on	on
LTE Band 41 (Class 3)	Left side: 20mm Right side: 20mm Bottom side: 20mm	Left side: 20mm Right side: 20mm Bottom side: 20mm	on	on	on	on	on	on	on	on	on	on	on	on
LTE Band 66	Left side: 20mm Right side: 20mm Bottom side: 20mm	Left side: 20mm Right side: 20mm Bottom side: 20mm	on	on	on	on	on	on	on	on	on	on	on	on

SAR test plan:

For Body worn SAR, the worst trigger distance of proximity sensor is 20mm, thus we test Front/Back/Left/Right/ Bottom side SAR in 15mm without power reduction. For Hotspot SAR, the worst trigger distance of proximity sensor is 20mm, thus we test Front/Back/Left/Right/ Bottom side SAR in 10mm without power reduction.



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6 SAR System Verification Procedure

6.1 Tissue Simulate Liquid

6.1.1 Recipes for Tissue Simulate Liquid

The following 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



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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 $22 \pm 2^\circ\text{C}$.

Tissue Type	Measured Frequency (MHz)	Target Tissue ($\pm 5\%$)		Measured Tissue		Liquid Temp.($^\circ\text{C}$)	Measured Date
		ϵ_r	$\sigma(\text{S/m})$	ϵ_r	$\sigma(\text{S/m})$		
750 Head	750	41.90 (39.81~44.00)	0.89 (0.85~0.94)	40.956	0.888	22.1	2020/08/10
835 Head	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	41.776	0.938	22.1	2020/08/16
835 Head	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	43.061	0.885	22.1	2020/09/02
1750 Head	1750	40.10 (38.10~42.11)	1.37 (1.30~1.44)	41.979	1.356	22.2	2020/08/27
1750 Head	1750	40.10 (38.10~42.11)	1.37 (1.30~1.44)	40.794	1.330	22.2	2020/09/22
1900 Head	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	41.526	1.408	22.3	2020/08/21
1900 Head	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	40.268	1.456	22.3	2020/09/15
2450 Head	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	38.013	1.852	22.0	2020/09/08
2600 Head	2600	39.00 (37.05~40.95)	1.96 (1.86~2.06)	37.443	2.027	22.1	2020/09/27

Table 4: Measurement result of Tissue electric parameters

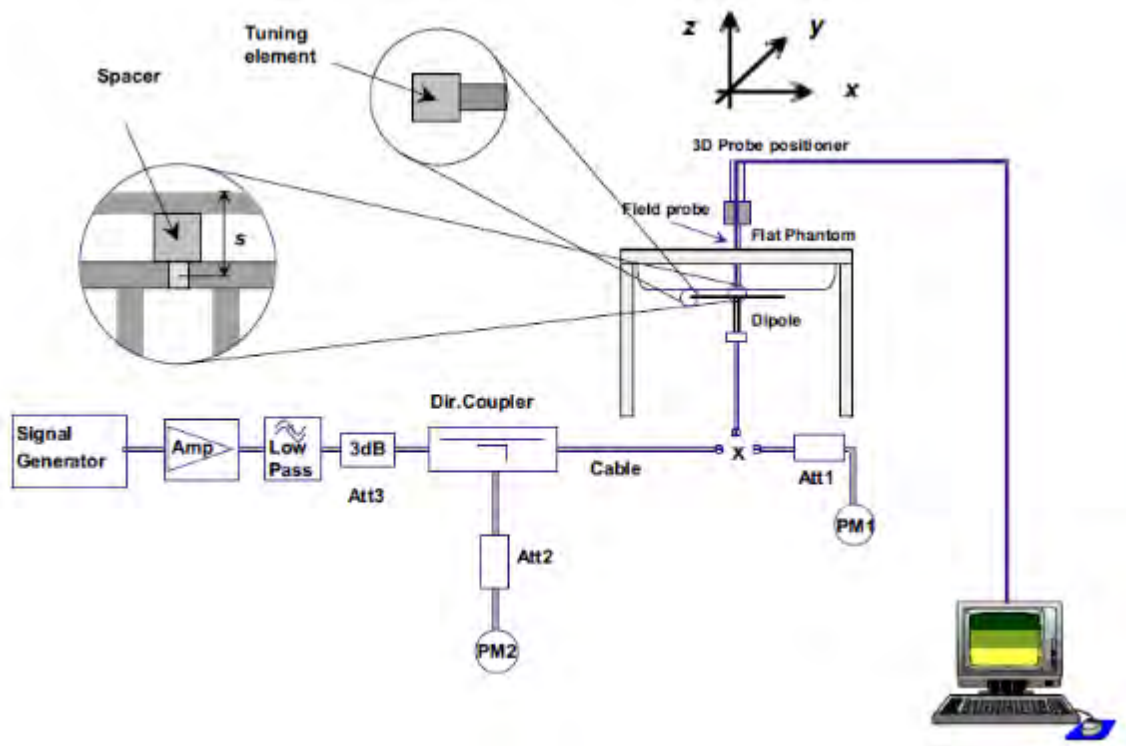


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6.2 SAR System Check

The microwave circuit arrangement for system Check is sketched in F-12. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within $\pm 10\%$ 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 $22\pm 2^{\circ}\text{C}$, the relative humidity was in the range 60% and the liquid depth above the ear reference points was above $15\pm 0.5\text{ cm}$ in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.



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



6.2.1 Justification for Extended SAR Dipole Calibrations

1) Referring to KDB865664 D01 requirements for dipole calibration, instead of the typical annual calibration recommended by measurement standards, longer calibration intervals of up to three years may be considered when it is demonstrated that the SAR target, impedance and return loss of a dipole have remain stable according to the following requirements. Each measured dipole is expected to evaluate with the following criteria at least on annual interval in Appendix C.

- a) There is no physical damage on the dipole;
- b) System check with specific dipole is within 10% of calibrated value;
- c) Return-loss is within 10% of calibrated measurement;
- d) Impedance is within 5Ω from the previous measurement.

2) Network analyzer probe calibration against air, distilled water and a shorting block performed before measuring liquid parameters.



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6.2.2 Summary System Check Result(s)

Validation Kit		Measured SAR 250mW	Measured SAR 250mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W) (±10%)	Target SAR (normalized to 1W) (±10%)	Liquid Temp. (°C)	Measured Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)		
D750V3	Head	2.17	1.42	8.68	5.68	8.39 (7.55~9.23)	5.63 (5.07~6.19)	22.1	2020/08/10
D835V2	Head	2.40	1.57	9.60	6.28	9.64 (8.68~10.60)	6.29 (5.66~6.92)	22.1	2020/08/16
D835V2	Head	2.46	1.60	9.84	6.40	9.64 (8.68~10.60)	6.29 (5.66~6.92)	22.1	2020/09/02
D1750V2	Head	8.73	4.64	34.92	18.56	36.30 (32.67~39.93)	19.20 (17.28~21.12)	22.2	2020/08/27
D1750V2	Head	9.25	4.92	37.00	19.68	36.30 (32.67~39.93)	19.20 (17.28~21.12)	22.2	2020/09/22
D1900V2	Head	10.40	5.38	41.60	21.52	39.30 (35.37~43.23)	20.20 (17.28~22.22)	22.3	2020/08/21
D1900V2	Head	10.50	5.43	42.00	21.72	39.30 (35.37~43.23)	20.20 (17.28~22.22)	22.3	2020/09/15
D2450V2	Head	13.50	6.25	54.00	25.00	51.90 (46.71~57.09)	23.80 (21.42~26.18)	22.0	2020/09/08
D2600V2	Head	14.00	6.25	56.00	25.00	56.80 (51.12~62.48)	24.90 (22.41~27.39)	22.1	2020/09/27

Table 5: SAR System Check Result

6.2.3 Detailed System Check Results

Please see the Appendix A



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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 $\leq \frac{1}{4}$ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as "otherwise" in the applicable procedures; SAR measurement is required for the secondary mode.

7.2 Operation Configurations

7.2.1 GSM Test Configuration

SAR tests for GSM 850 and GSM 1900, a communication link is set up with a base station by air link. Using CMW500 the power lever is set to "5" and "0" in SAR of GSM 850 and GSM 1900. The tests in the band of GSM 850 and GSM 1900 are performed in the mode of GPRS/EGPRS function. Since the GPRS class is 33 for this EUT, it has at most 4 timeslots in uplink and at most 5 timeslots in downlink, the maximum total timeslot is 6. The EGPRS class is 33 for this EUT, it has at most 4 timeslots in uplink, and at most 5 timeslots in downlink, the maximum total timeslot is 6.

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



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7.2.2 CDMA Test Configuration

1) . 1x RTT Handsets

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

2) . Output Power Verification

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

3) . Head SAR

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

4) . Body-Worn Accessory SAR

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

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



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5) . Handsets with built-in Ev-Do

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

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

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



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7.2.3 WCDMA Test Configuration

1) . Output Power Verification

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

2) . Head SAR

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's". The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for 12.2 kbps AMR in 3.4 kbps SRB (signaling radio bearer) using the highest reported SAR configuration in 12.2 kbps RMC for head exposure

3) . Body SAR

SAR for body configurations is measured using a 12.2 kbps RMC with TPC bits configured to all "1's". The 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCHn configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreading 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 $\leq \frac{1}{4}$ 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(β_c , β_d), and HS-DPCCH power offset parameters (Δ_{ACK} , Δ_{NACK} , Δ_{CQI}) 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.



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Sub-test	βc	Bd	$\beta d(SF)$	$\beta c/\beta d$	β_{hs}	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: ΔACK , $\Delta NACK$ and $\Delta CQI = 8$ Ahs = $\beta_{hs}/\beta c = 30/15$ $\beta_{hs} = 30/15 * \beta c$
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, ΔACK and $\Delta NACK = 8$ (Ahs = 30/15) with $\beta_{hs} = 30/15 * \beta c$, and $\Delta CQI = 7$ (Ahs = 24/15) with $\beta_{hs} = 24/15 * \beta c$.
Note3: CM = 1 for $\beta c/\beta d = 12/15$, $\beta_{hs}/\beta c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

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



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

Table 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.



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Sub-test ¹	β_c ²	β_d ³	β_d (SF) ⁴	β_c/β_d ⁵	β_{hs} ⁽¹⁾	β_{ec} ⁶	β_{ed} ⁷	β_c (SF) ⁸	β_{ed} (code) ⁹	CM ⁽²⁾ (dB) ¹⁰	MP R ¹¹ (dB) ^c	AG ⁽⁴⁾ Inde x ¹²	E-TFC I ¹³
1 ¹	11/15 ⁽³⁾	15/15 ⁽³⁾	64 ⁴	11/15 ⁽³⁾	22/15 ^c	209/225 ^c	1039/225 ^c	4 ⁸	1 ⁹	1.0 ^c	0.0 ^c	20 ^c	75 ^c
2 ¹	6/15 ^c	15/15 ^c	64 ⁴	6/15 ^c	12/15 ^c	12/15 ^c	94/75 ^c	4 ⁸	1 ⁹	3.0 ^c	2.0 ^c	12 ^c	67 ^c
3 ¹	15/15 ^c	9/15 ^c	64 ⁴	15/9 ^c	30/15 ^c	30/15 ^c	$\beta_{ed1}:47/15c$ $\beta_{ed2}:47/15c$	4 ⁸	2 ⁹	2.0 ^c	1.0 ^c	15 ^c	92 ^c
4 ¹	2/15 ^c	15/15 ^c	64 ⁴	2/15 ^c	4/15 ^c	2/15 ^c	56/75 ^c	4 ⁸	1 ⁹	3.0 ^c	2.0 ^c	17 ^c	71 ^c
5 ¹	15/15 ⁽⁴⁾	15/15 ⁽⁴⁾	64 ⁴	15/15 ⁽⁴⁾	30/15 ^c	24/15 ^c	134/15 ^c	4 ⁸	1 ⁹	1.0 ^c	0.0 ^c	21 ^c	81 ^c

Note 1: ΔACK , $\Delta NACK$ and $\Delta CQI=8$ $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$
 Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference^c
 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 $\beta_d = 15/15$ ^c
 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 $\beta_d = 15/15$ ^c
 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^c
 Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.^c

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 Spreading Factor	Maximum E-DCH Transport Block Bits	Max Rate (Mbps)
1	1	4	10	4	7110	0.7296
2	2	8	2	4	2798	1.4592
	2	4	10	4	14484	
3	2	4	10	4	14484	1.4592
4	2	8	2	2	5772	2.9185
	2	4	10	2	20000	2.00
5	2	4	10	2	20000	2.00
6 (No DPDCH)	4	8	10	2SF2&2SF	11484	5.76
	4	4	2	4	20000	2.00
7 (No DPDCH)	4	8	2	2SF2&2SF	22996	?
	4	4	10	4	20000	?

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

Table 9: HSUPA UE category



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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.



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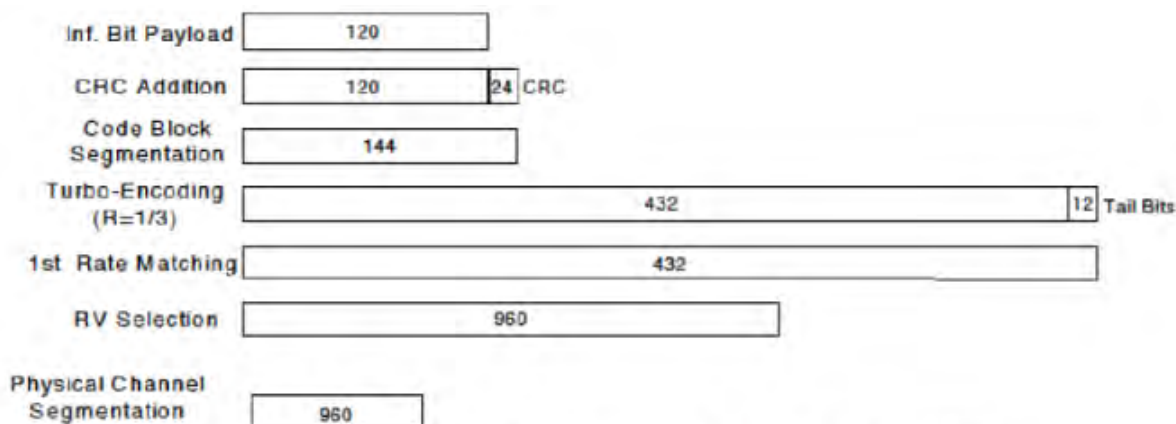


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

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

Note 1: Δ ACK, Δ NACK and Δ CQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$
Note 2: CM=1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.
Note 3: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$

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

Note:

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



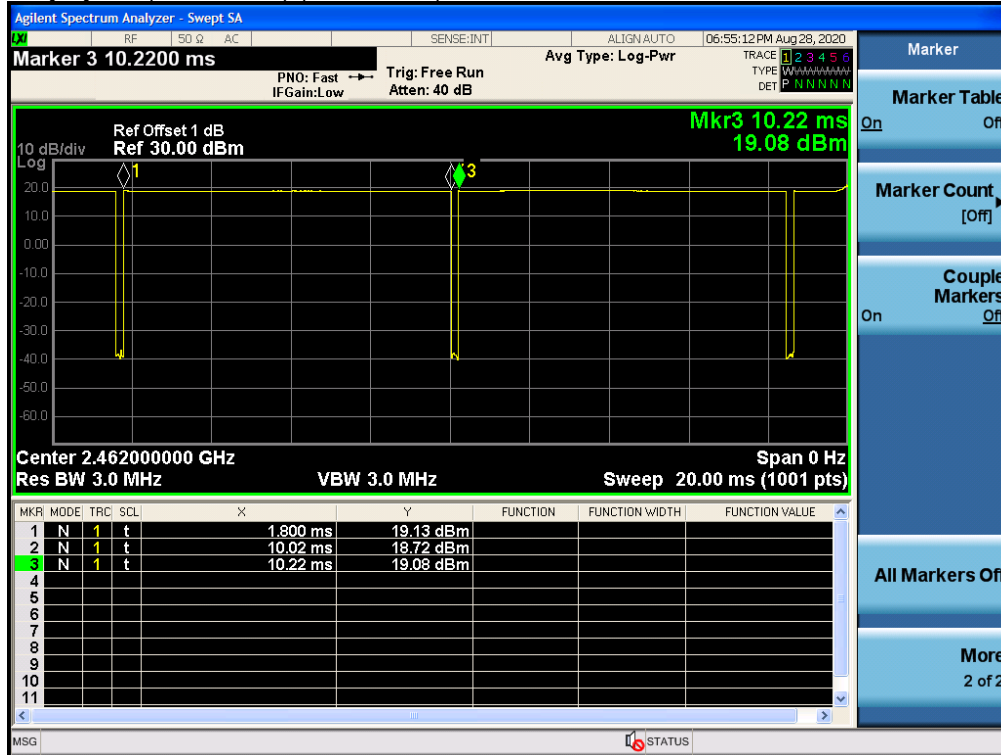
7.2.4 WiFi Test Configuration

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

7.2.4.1 Duty cycle

1) Wi-Fi 2.4GHz 802.11b:

Duty cycle=(10.02-1.80)/(10.22-1.80)=97.62%



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7.2.4.2 Initial Test Position SAR Test Reduction Procedure

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

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

7.2.4.3 Initial Test Configuration Procedures

An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. SAR is measured using the highest measured maximum output power channel. For configurations with the same specified or measured maximum output power, additional transmission mode and test channel selection procedures are required. SAR test reduction for subsequent highest output test channels is determined according to *reported* SAR of the initial test configuration. For next to the ear, hotspot mode and UMC mini-tablet exposure configurations where multiple test positions are required, the initial test position procedure is applied to minimize the number of test positions required for SAR measurement using the initial test configuration transmission mode. For fixed exposure conditions that do not have multiple SAR test positions, SAR is measured in the transmission mode determined by the initial test configuration.

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

7.2.4.4 Subsequent Test Configuration Procedures

SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units. The initial test position procedure is applied to next to the ear, UMPC mini-tablet and hotspot mode configurations. When the same maximum output power is specified for multiple transmission modes, additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. The subsequent test configuration and SAR measurement procedures are described in the following.

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



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- 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”



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7.2.4.5 2.4 GHz WiFi SAR Procedures

Separate SAR procedures are applied to DSSS and OFDM configurations in the 2.4 GHz band to simplify DSSS test requirements. For 802.11b DSSS SAR measurements, DSSS SAR procedure applies to fixed exposure test position and initial test position procedure applies to multiple exposure test positions. When SAR measurement is required for an OFDM configuration, the initial test configuration, subsequent test configuration and initial test position procedures are applied. The SAR test exclusion requirements for 802.11g/n OFDM configurations are described in following.

- **802.11b DSSS SAR Test Requirements**

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

- 1) . When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
- 2) . When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

- **2.4 GHz 802.11g/n OFDM SAR Test Exclusion Requirements**

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied (section 5.3, including sub-sections). SAR is not required for the following 2.4 GHz OFDM conditions.

- 1) . When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
- 2) . When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

- **SAR Test Requirements for OFDM configurations**

When SAR measurement is required for 802.11 g/n OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.



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7.2.5 LTE Test Configuration

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

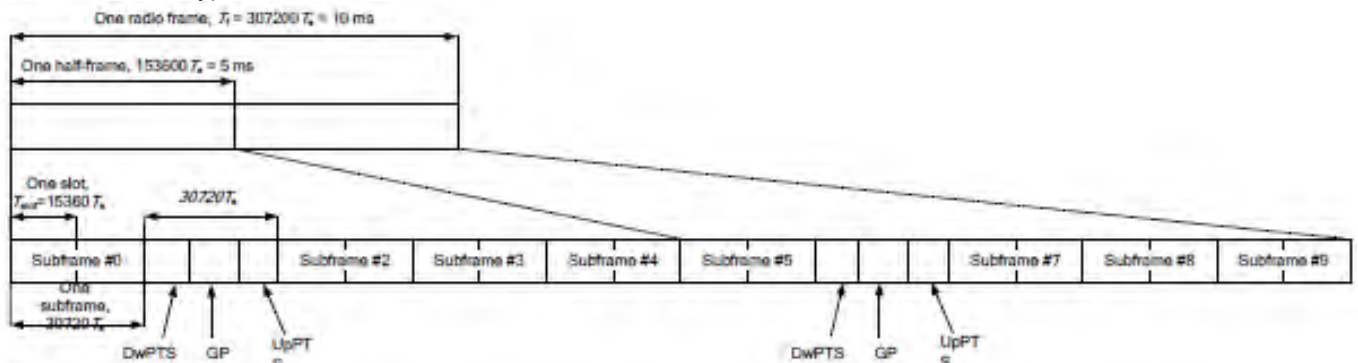
TDD LTE test consideration

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

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

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

Frame structure type 2:





Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	6592.Ts	2192.Ts	2560.Ts	7680.Ts	2192.Ts	2560.Ts
1	19760.Ts			20480.Ts		
2	21952.Ts			23040.Ts		
3	24144.Ts			25600.Ts		
4	26336.Ts			7680.Ts		
5	6592.Ts	4384.Ts	5120.Ts	20480.Ts	4384.Ts	5120.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



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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
64 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 $> \frac{1}{2}$ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

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 $> \frac{1}{2}$ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.



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8 Test Result

8.1 Measurement of RF conducted Power

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

8.1.1 Conducted Power of GSM

Note:

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

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

- 2) . The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots. The calculated method is shown as below:

Frame-averaged power = 10 x log (Burst-averaged power mW x Slot used / 8

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

8.1.2 Conducted Power of WCDMA

Note:

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

8.1.3 Conducted Power of CDMA

8.1.4 Conducted Power of LTE

8.1.5 Conducted Power of WIFI

Note:

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

8.1.6 Conducted Power of BT



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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	2.462	Head	18.00	63.1	0	19.8	3.0	N
		Body-worn	18.00	63.1	15	6.6	3.0	N
		hotspot	18.00	63.1	10	9.9	3.0	N
Bluetooth	2.48	Head	9.00	7.9	0	2.5	3.0	Y
		Body-worn	9.00	7.9	15	0.8	3.0	Y
		hotspot	9.00	7.9	10	1.3	3.0	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:

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

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

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.



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8.3 Measurement of SAR Data

8.3.1 SAR Result of GSM850

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test data										
Left cheek	GSM	190/836.6	1:8.3	0.260	-0.14	31.57	32.50	1.239	0.322	22.1
Left tilted	GSM	190/836.6	1:8.3	0.201	0.07	31.57	32.50	1.239	0.249	22.1
Right cheek	GSM	190/836.6	1:8.3	0.263	-0.03	31.57	32.50	1.239	0.326	22.1
Right tilted	GSM	190/836.6	1:8.3	0.185	-0.02	31.57	32.50	1.239	0.229	22.1
Body worn Test data with cover closed(Separate 15mm)										
Front side	GSM	190/836.6	1:8.3	0.109	-0.01	31.57	32.50	1.239	0.135	22.1
Back side	GSM	190/836.6	1:8.3	0.337	-0.03	31.57	32.50	1.239	0.417	22.1
Hotspot Test data with cover closed(Separate 10mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.164	-0.05	27.31	28.50	1.315	0.216	22.1
Back side	GPRS 4TS	190/836.6	1:2.075	0.512	-0.07	27.31	28.50	1.315	0.673	22.1
Left side	GPRS 4TS	190/836.6	1:2.075	0.214	0.09	27.31	28.50	1.315	0.281	22.1
Right side	GPRS 4TS	190/836.6	1:2.075	0.287	-0.10	27.31	28.50	1.315	0.377	22.1
Bottom side	GPRS 4TS	190/836.6	1:2.075	0.082	0.12	27.31	28.50	1.315	0.108	22.1
Body worn Test data with cover opened(Separate 15mm)										
Front side	GSM	190/836.6	1:8.3	0.081	0.08	31.57	32.50	1.239	0.100	22.1
Back side	GSM	190/836.6	1:8.3	0.121	-0.11	31.57	32.50	1.239	0.150	22.1
Hotspot Test data with cover opened(Separate 10mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.218	-0.12	27.31	28.50	1.315	0.287	22.1
Back side	GPRS 4TS	190/836.6	1:2.075	0.254	-0.01	27.31	28.50	1.315	0.334	22.1
Left side	GPRS 4TS	190/836.6	1:2.075	0.137	-0.16	27.31	28.50	1.315	0.180	22.1
Right side	GPRS 4TS	190/836.6	1:2.075	0.223	-0.13	27.31	28.50	1.315	0.293	22.1
Bottom side	GPRS 4TS	190/836.6	1:2.075	0.086	0.08	27.31	28.50	1.315	0.113	22.1

Table 11: SAR of GSM850 for Head and Body

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
- 2) Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.





8.3.2 SAR Result of GSM1900

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test data										
Left cheek	GSM	661/1880	1:8.3	0.114	-0.08	29.06	30.00	1.242	0.142	22.3
Left tilted	GSM	661/1880	1:8.3	0.028	0.01	29.06	30.00	1.242	0.035	22.3
Right cheek	GSM	661/1880	1:8.3	0.090	0.05	29.06	30.00	1.242	0.112	22.3
Right tilted	GSM	661/1880	1:8.3	0.021	-0.05	29.06	30.00	1.242	0.026	22.3
Body worn Test data with cover closed(Separate 15mm)										
Front side	GSM	661/1880	1:8.3	0.125	-0.03	29.06	30.00	1.242	0.155	22.3
Back side	GSM	661/1880	1:8.3	0.385	0.01	29.06	30.00	1.242	0.478	22.3
Hotspot Test data with cover closed(Separate 10mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.273	-0.13	24.76	26.00	1.330	0.363	22.3
Back side	GPRS 4TS	661/1880	1:2.075	0.814	-0.01	24.76	26.00	1.330	1.083	22.3
Left side	GPRS 4TS	661/1880	1:2.075	0.324	-0.19	24.76	26.00	1.330	0.431	22.3
Right side	GPRS 4TS	661/1880	1:2.075	0.103	-0.17	24.76	26.00	1.330	0.137	22.3
Bottom side	GPRS 4TS	661/1880	1:2.075	0.220	-0.09	24.76	26.00	1.330	0.293	22.3
Back side	GPRS 4TS	512/1850.2	1:2.075	0.837	0.04	24.51	26.00	1.409	1.180	22.3
Back side-repeated	GPRS 4TS	512/1850.2	1:2.075	0.822	0.06	24.51	26.00	1.409	1.158	22.3
Back side	GPRS 4TS	810/1909.8	1:2.075	0.740	-0.16	24.93	26.00	1.279	0.947	22.3
Body worn Test data with cover opened(Separate 15mm)										
Front side	GSM	661/1880	1:8.3	0.119	-0.19	29.06	30.00	1.242	0.148	22.3
Back side	GSM	661/1880	1:8.3	0.289	0.10	29.06	30.00	1.242	0.359	22.3
Hotspot Test data with cover opened(Separate 10mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.557	-0.08	24.76	26.00	1.330	0.741	22.3
Back side	GPRS 4TS	661/1880	1:2.075	0.735	0.07	24.76	26.00	1.330	0.978	22.3
Left side	GPRS 4TS	661/1880	1:2.075	0.336	0.09	24.76	26.00	1.330	0.447	22.3
Right side	GPRS 4TS	661/1880	1:2.075	0.094	-0.10	24.76	26.00	1.330	0.125	22.3
Bottom side	GPRS 4TS	661/1880	1:2.075	0.227	-0.06	24.76	26.00	1.330	0.302	22.3
Back side	GPRS 4TS	512/1850.2	1:2.075	0.688	0.09	24.51	26.00	1.409	0.970	22.3
Back side	GPRS 4TS	810/1909.8	1:2.075	0.707	0.11	24.93	26.00	1.279	0.905	22.3

Table 12: SAR of GSM1900 for Head and Body.

Note:

- The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
- Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.

Test Position	Channel/ Frequency (MHz)	Measured SAR (1g)	1 st Repeated SAR (1g)	Ratio	2 nd Repeated SAR (1g)	3 rd Repeated SAR (1g)
Back side	512/1850.2	0.837	0.822	1.018	N/A	N/A

Note: 1) When the original highest measured SAR is $\geq 0.80\text{ W/kg}$, 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 $\geq 1.45\text{ W/kg}$ ($\sim 10\%$ from the 1-g SAR limit).

3) A third repeated measurement was performed only if the original, first or second repeated measurement was $\geq 1.5\text{ W/kg}$ 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 $< 0.80\text{ W/kg}$

Table 13: SAR Measurement Variability Results.



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8.3.3 SAR Result of WCDMA Band II

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test data										
Left cheek	RMC	9400/1880	1:1	0.689	-0.04	24.12	25.00	1.225	0.844	22.3
Left tilted	RMC	9400/1880	1:1	0.171	0.18	24.12	25.00	1.225	0.209	22.3
Right cheek	RMC	9400/1880	1:1	0.627	-0.17	24.12	25.00	1.225	0.768	22.3
Right tilted	RMC	9400/1880	1:1	0.128	-0.15	24.12	25.00	1.225	0.157	22.3
Left cheek	RMC	9262/1852.4	1:1	0.592	-0.06	24.11	25.00	1.227	0.727	22.3
Left cheek	RMC	9538/1907.6	1:1	0.707	0.17	24.15	25.00	1.216	0.860	22.3
Body worn Test data with cover closed with sensor on (Separate 15mm)										
Front side	RMC	9400/1880	1:1	0.197	0.14	20.96	22.00	1.271	0.250	22.3
Back side	RMC	9400/1880	1:1	0.579	-0.08	20.96	22.00	1.271	0.736	22.3
Body worn Test data with cover closed with sensor off (Separate 19mm)										
Front side	RMC	9400/1880	1:1	0.336	-0.16	24.12	25.00	1.225	0.411	22.3
Back side	RMC	9400/1880	1:1	0.845	-0.14	24.12	25.00	1.225	1.035	22.3
Back side	RMC	9262/1852.4	1:1	0.880	-0.07	24.11	25.00	1.227	1.080	22.3
Back side	RMC	9538/1907.6	1:1	0.767	0.08	24.15	25.00	1.216	0.933	22.3
Hotspot Test data with cover closed with sensor on (Separate 10mm)										
Front side	RMC	9400/1880	1:1	0.292	0.02	20.96	22.00	1.271	0.371	22.3
Back side	RMC	9400/1880	1:1	0.862	-0.03	20.96	22.00	1.271	1.095	22.3
Left side	RMC	9400/1880	1:1	0.369	-0.01	20.96	22.00	1.271	0.469	22.3
Right side	RMC	9400/1880	1:1	0.126	-0.01	20.96	22.00	1.271	0.160	22.3
Bottom side	RMC	9400/1880	1:1	0.268	-0.17	20.96	22.00	1.271	0.341	22.3
Back side	RMC	9262/1852.4	1:1	1.010	0.14	21.00	22.00	1.259	1.272	22.3
Back side	RMC	9538/1907.6	1:1	0.859	0.09	21.11	22.00	1.227	1.054	22.3
Back side-repeated	RMC	9262/1852.4	1:1	0.975	0.08	21.00	22.00	1.259	1.227	22.3
Hotspot Test data with cover closed with sensor off (Separate 19mm)										
Front side	RMC	9400/1880	1:1	0.336	-0.16	24.12	25.00	1.225	0.411	22.3
Back side	RMC	9400/1880	1:1	0.845	-0.14	24.12	25.00	1.225	1.035	22.3
Left side	RMC	9400/1880	1:1	0.315	0.10	24.12	25.00	1.225	0.386	22.3
Right side	RMC	9400/1880	1:1	0.165	0.14	24.12	25.00	1.225	0.202	22.3
Bottom side	RMC	9400/1880	1:1	0.263	-0.13	24.12	25.00	1.225	0.322	22.3
Back side	RMC	9262/1852.4	1:1	0.880	-0.07	24.11	25.00	1.227	1.080	22.3
Back side	RMC	9538/1907.6	1:1	0.767	0.10	24.15	25.00	1.216	0.933	22.3
Body worn Test data with cover opened with sensor on (Separate 15mm)										
Front side	RMC	9400/1880	1:1	0.379	0.00	20.96	22.00	1.271	0.482	22.3
Back side	RMC	9400/1880	1:1	0.540	-0.19	20.96	22.00	1.271	0.686	22.3
Body worn Test data with cover opened with sensor off (Separate 19mm)										
Front side	RMC	9400/1880	1:1	0.533	0.00	24.12	25.00	1.225	0.653	22.3
Back side	RMC	9400/1880	1:1	0.644	0.07	24.12	25.00	1.225	0.789	22.3
Back side	RMC	9262/1852.4	1:1	0.656	0.11	24.11	25.00	1.227	0.805	22.3
Back side	RMC	9538/1907.6	1:1	0.642	0.12	24.15	25.00	1.216	0.781	22.3
Hotspot Test data with cover opened with sensor on (Separate 10mm)										
Front side	RMC	9400/1880	1:1	0.675	0.11	20.96	22.00	1.271	0.858	22.3
Back side	RMC	9400/1880	1:1	0.910	0.03	20.96	22.00	1.271	1.156	22.3
Left side	RMC	9400/1880	1:1	0.440	0.18	20.96	22.00	1.271	0.559	22.3
Right side	RMC	9400/1880	1:1	0.125	-0.15	20.96	22.00	1.271	0.159	22.3
Bottom side	RMC	9400/1880	1:1	0.312	-0.03	20.96	22.00	1.271	0.396	22.3
Front side	RMC	9262/1852.4	1:1	0.700	0.16	21.00	22.00	1.259	0.881	22.3
Front side	RMC	9538/1907.6	1:1	0.634	-0.07	21.11	22.00	1.227	0.778	22.3
Back side	RMC	9262/1852.4	1:1	0.951	0.13	21.00	22.00	1.259	1.197	22.3
Back side	RMC	9538/1907.6	1:1	0.850	0.03	21.11	22.00	1.227	1.043	22.3



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Hotspot Test data with cover opened with sensor off (Separate 19mm)										
Front side	RMC	9400/1880	1:1	0.533	0.00	24.12	25.00	1.225	0.653	22.3
Back side	RMC	9400/1880	1:1	0.644	0.07	24.12	25.00	1.225	0.789	22.3
Left side	RMC	9400/1880	1:1	0.410	0.14	24.12	25.00	1.225	0.502	22.3
Right side	RMC	9400/1880	1:1	0.183	-0.06	24.12	25.00	1.225	0.224	22.3
Bottom side	RMC	9400/1880	1:1	0.289	0.06	24.12	25.00	1.225	0.354	22.3
Back side	RMC	9262/1852.4	1:1	0.656	0.11	24.11	25.00	1.227	0.805	22.3
Back side	RMC	9538/1907.6	1:1	0.642	0.12	24.15	25.00	1.216	0.781	22.3

Table 14: 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 KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Back Side	9262/1852.4	1.010	0.975	1.036	N/A	N/A

Note: 1) When the original highest measured SAR is $\geq 0.80\text{ W/kg}$, 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 $\geq 1.45\text{ W/kg}$ ($\sim 10\%$ from the 1-g SAR limit).

3) A third repeated measurement was performed only if the original, first or second repeated measurement was $\geq 1.5\text{ W/kg}$ 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 $< 0.80\text{ W/kg}$

Table 15: SAR Measurement Variability Results.



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8.3.4 SAR Result of WCDMA Band IV

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test data										
Left cheek	RMC	1412/1732.4	1:1	0.126	0.14	23.13	24.00	1.222	0.154	22.2
Left tilted	RMC	1412/1732.4	1:1	0.035	-0.11	23.13	24.00	1.222	0.043	22.2
Right cheek	RMC	1412/1732.4	1:1	0.146	0.02	23.13	24.00	1.222	0.178	22.2
Right tilted	RMC	1412/1732.4	1:1	0.025	-0.09	23.13	24.00	1.222	0.031	22.2
Body worn Test data with cover closed with sensor on (Separate 15mm)										
Front side	RMC	1412/1732.4	1:1	0.161	0.08	20.38	21.00	1.153	0.186	22.2
Back side	RMC	1412/1732.4	1:1	0.366	0.01	20.38	21.00	1.153	0.422	22.2
Body worn Test data with cover closed with sensor off (Separate 19mm)										
Front side	RMC	1412/1732.4	1:1	0.268	-0.16	23.13	24.00	1.222	0.327	22.2
Back side	RMC	1412/1732.4	1:1	0.678	0.05	23.13	24.00	1.222	0.828	22.2
Back side	RMC	1312/1712.4	1:1	0.532	0.00	23.14	24.00	1.219	0.649	22.2
Back side	RMC	1513/1752.6	1:1	0.838	0.01	23.12	24.00	1.225	1.026	22.2
Back side-repeated	RMC	1513/1752.6	1:1	0.770	0.16	23.12	24.00	1.225	0.943	22.2
Hotspot Test data with cover closed with sensor on (Separate 10mm)										
Front side	RMC	1412/1732.4	1:1	0.241	-0.09	20.38	21.00	1.153	0.278	22.2
Back side	RMC	1412/1732.4	1:1	0.698	0.02	20.38	21.00	1.153	0.805	22.2
Left side	RMC	1412/1732.4	1:1	0.250	0.05	20.38	21.00	1.153	0.288	22.2
Right side	RMC	1412/1732.4	1:1	0.077	-0.17	20.38	21.00	1.153	0.089	22.2
Bottom side	RMC	1412/1732.4	1:1	0.025	-0.18	20.38	21.00	1.153	0.029	22.2
Back side	RMC	1312/1712.4	1:1	0.558	-0.14	20.36	21.00	1.159	0.647	22.2
Back side	RMC	1513/1752.6	1:1	0.810	0.10	20.35	21.00	1.161	0.941	22.2
Hotspot Test data with cover closed with sensor off (Separate 19mm)										
Front side	RMC	1412/1732.4	1:1	0.268	-0.16	23.13	24.00	1.222	0.327	22.2
Back side	RMC	1412/1732.4	1:1	0.678	0.05	23.13	24.00	1.222	0.828	22.2
Left side	RMC	1412/1732.4	1:1	0.195	-0.11	23.13	24.00	1.222	0.238	22.2
Right side	RMC	1412/1732.4	1:1	0.085	-0.03	23.13	24.00	1.222	0.104	22.2
Bottom side	RMC	1412/1732.4	1:1	0.213	0.17	23.13	24.00	1.222	0.260	22.2
Back side	RMC	1312/1712.4	1:1	0.532	0.00	23.14	24.00	1.219	0.649	22.2
Back side	RMC	1513/1752.6	1:1	0.838	0.01	23.12	24.00	1.225	1.026	22.2
Back side-repeated	RMC	1513/1752.6	1:1	0.770	0.16	23.12	24.00	1.225	0.943	22.2
Body worn Test data with cover opened with sensor on (Separate 15mm)										
Front side	RMC	1412/1732.4	1:1	0.310	-0.11	20.38	21.00	1.153	0.358	22.2
Back side	RMC	1412/1732.4	1:1	0.416	0.07	20.38	21.00	1.153	0.480	22.2
Body worn Test data with cover opened with sensor off (Separate 19mm)										
Front side	RMC	1412/1732.4	1:1	0.579	-0.19	23.13	24.00	1.222	0.707	22.2
Back side	RMC	1412/1732.4	1:1	0.717	0.18	23.13	24.00	1.222	0.876	22.2
Back side	RMC	1312/1712.4	1:1	0.505	0.14	23.14	24.00	1.219	0.616	22.2
Back side	RMC	1513/1752.6	1:1	0.832	0.00	23.12	24.00	1.225	1.019	22.2
Hotspot Test data with cover opened with sensor on (Separate 10mm)										
Front side	RMC	1412/1732.4	1:1	0.526	0.01	20.38	21.00	1.153	0.607	22.2
Back side	RMC	1412/1732.4	1:1	0.702	0.02	20.38	21.00	1.153	0.810	22.2
Left side	RMC	1412/1732.4	1:1	0.229	0.11	20.38	21.00	1.153	0.264	22.2
Right side	RMC	1412/1732.4	1:1	0.054	0.04	20.38	21.00	1.153	0.062	22.2
Bottom side	RMC	1412/1732.4	1:1	0.332	-0.06	20.38	21.00	1.153	0.383	22.2
Back side	RMC	1312/1712.4	1:1	0.505	0.10	20.36	21.00	1.159	0.585	22.2
Back side	RMC	1513/1752.6	1:1	0.836	0.05	20.35	21.00	1.161	0.971	22.2
Hotspot Test data with cover opened with sensor off (Separate 19mm)										
Front side	RMC	1412/1732.4	1:1	0.579	-0.19	23.13	24.00	1.222	0.707	22.2
Back side	RMC	1412/1732.4	1:1	0.717	0.18	23.13	24.00	1.222	0.876	22.2



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Left side	RMC	1412/1732.4	1:1	0.264	-0.15	23.13	24.00	1.222	0.323	22.2
Right side	RMC	1412/1732.4	1:1	0.068	-0.05	23.13	24.00	1.222	0.083	22.2
Bottom side	RMC	1412/1732.4	1:1	0.346	0.13	23.13	24.00	1.222	0.423	22.2
Back side	RMC	1312/1712.4	1:1	0.505	0.15	23.14	24.00	1.219	0.616	22.2
Back side	RMC	1513/1752.6	1:1	0.832	-0.13	23.12	24.00	1.225	1.019	22.2

Table 16: 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 KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Back Side	1513/1752.6	0.838	0.770	1.088	N/A	N/A

Note: 1) When the original highest measured SAR is $\geq 0.80\text{ W/kg}$, 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 $\geq 1.45\text{ W/kg}$ ($\sim 10\%$ from the 1-g SAR limit).

3) A third repeated measurement was performed only if the original, first or second repeated measurement was $\geq 1.5\text{ W/kg}$ 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 $< 0.80\text{ W/kg}$

Table 17: SAR Measurement Variability Results.



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8.3.5 SAR Result of WCDMA Band V

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test data										
Left cheek	RMC	4182/836.4	1:1	0.520	0.02	23.88	25.00	1.294	0.673	22.1
Left tilted	RMC	4182/836.4	1:1	0.363	0.04	23.88	25.00	1.294	0.470	22.1
Right cheek	RMC	4182/836.4	1:1	0.610	-0.02	23.88	25.00	1.294	0.789	22.1
Right tilted	RMC	4182/836.4	1:1	0.383	0.07	23.88	25.00	1.294	0.496	22.1
Body worn Test data with cover closed(Separate 15mm)										
Front side	RMC	4182/836.4	1:1	0.141	-0.11	23.88	25.00	1.294	0.182	22.1
Back side	RMC	4182/836.4	1:1	0.516	0.03	23.88	25.00	1.294	0.668	22.1
Hotspot Test data with cover closed(Separate 10mm)										
Front side	RMC	4182/836.4	1:1	0.149	0.08	23.88	25.00	1.294	0.193	22.1
Back side	RMC	4182/836.4	1:1	0.662	-0.10	23.88	25.00	1.294	0.857	22.1
Left side	RMC	4182/836.4	1:1	0.187	-0.06	23.88	25.00	1.294	0.242	22.1
Right side	RMC	4182/836.4	1:1	0.328	-0.19	23.88	25.00	1.294	0.424	22.1
Bottom side	RMC	4182/836.4	1:1	0.147	-0.16	23.88	25.00	1.294	0.190	22.1
Back side	RMC	4132/826.4	1:1	0.686	0.02	23.85	25.00	1.303	0.894	22.1
Back side	RMC	4233/846.6	1:1	0.633	0.15	23.79	25.00	1.321	0.836	22.1
Body worn Test data with cover opened(Separate 15mm)										
Front side	RMC	4182/836.4	1:1	0.153	0.06	23.88	25.00	1.294	0.198	22.1
Back side	RMC	4182/836.4	1:1	0.208	0.13	23.88	25.00	1.294	0.269	22.1
Hotspot Test data with cover opened(Separate 10mm)										
Front side	RMC	4182/836.4	1:1	0.291	-0.12	23.88	25.00	1.294	0.377	22.1
Back side	RMC	4182/836.4	1:1	0.382	0.13	23.88	25.00	1.294	0.494	22.1
Left side	RMC	4182/836.4	1:1	0.168	0.16	23.88	25.00	1.294	0.217	22.1
Right side	RMC	4182/836.4	1:1	0.333	-0.18	23.88	25.00	1.294	0.431	22.1
Bottom side	RMC	4182/836.4	1:1	0.111	-0.18	23.88	25.00	1.294	0.144	22.1

Table 18: 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 KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.



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8.3.6 SAR Result of CDMA BC0

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test data										
Left cheek	RC3+SO55	384/836.52	1:1	0.238	0.12	23.82	24.80	1.253	0.298	22.1
Left tilted	RC3+SO55	384/836.52	1:1	0.137	-0.07	23.82	24.80	1.253	0.172	22.1
Right cheek	RC3+SO55	384/836.52	1:1	0.490	-0.01	23.82	24.80	1.253	0.614	22.1
Right tilted	RC3+SO55	384/836.52	1:1	0.142	0.14	23.82	24.80	1.253	0.178	22.1
Body worn Test data with cover closed(Separate 15mm)										
Front side	RC3+SO32	384/836.52	1:1	0.132	-0.03	23.86	24.80	1.242	0.164	22.1
Back side	RC3+SO32	384/836.52	1:1	0.494	0.07	23.86	24.80	1.242	0.613	22.1
Hotspot Test data with cover closed(Separate 10mm)										
Front side	RC3+SO32	384/836.52	1:1	0.160	0.04	23.86	24.80	1.242	0.199	22.1
Back side	RC3+SO32	384/836.52	1:1	0.685	0.02	23.86	24.80	1.242	0.851	22.1
Back side	RC3+SO32	1013/824.7	1:1	0.740	0.05	23.64	24.80	1.306	0.967	22.1
Back side	RC3+SO32	777/848.31	1:1	0.490	-0.02	23.66	24.80	1.300	0.637	22.1
Back side	EVDO RTAP 153.6Kbps	384/836.52	1:1	0.621	0.03	23.73	24.80	1.279	0.794	22.1
Back side	EVDO RETAP 4096Bits	384/836.52	1:1	0.633	0.13	23.82	24.80	1.253	0.793	22.1
Left side	RC3+SO32	384/836.52	1:1	0.121	0.08	23.86	24.80	1.242	0.150	22.1
Right side	RC3+SO32	384/836.52	1:1	0.421	0.13	23.86	24.80	1.242	0.523	22.1
Bottom side	RC3+SO32	384/836.52	1:1	0.148	0.09	23.86	24.80	1.242	0.184	22.1
Body worn Test data with cover opened(Separate 15mm)										
Front side	RC3+SO32	384/836.52	1:1	0.132	-0.18	23.86	24.80	1.242	0.164	22.1
Back side	RC3+SO32	384/836.52	1:1	0.206	-0.17	23.86	24.80	1.242	0.256	22.1
Hotspot Test data with cover opened(Separate 10mm)										
Front side	RC3+SO32	384/836.52	1:1	0.201	-0.13	23.86	24.80	1.242	0.250	22.1
Back side	RC3+SO32	384/836.52	1:1	0.335	-0.09	23.86	24.80	1.242	0.416	22.1
Back side	EVDO RTAP 153.6Kbps	384/836.52	1:1	0.327	-0.06	23.73	24.80	1.279	0.418	22.1
Back side	EVDO RETAP 4096Bits	384/836.52	1:1	0.322	-0.11	23.82	24.80	1.253	0.404	22.1
Left side	RC3+SO32	384/836.52	1:1	0.142	-0.06	23.86	24.80	1.242	0.176	22.1
Right side	RC3+SO32	384/836.52	1:1	0.261	0.03	23.86	24.80	1.242	0.324	22.1
Bottom side	RC3+SO32	384/836.52	1:1	0.076	0.14	23.86	24.80	1.242	0.094	22.1

Table 19: SAR of CDMA BC0 for Head and Body.

Note:

- The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
- Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.



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8.3.7 SAR Result of CDMA BC1

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test data										
Left cheek	RC3+SO55	600/1880	1:1	0.680	0.07	24.03	24.80	1.194	0.812	22.3
Left tilted	RC3+SO55	600/1880	1:1	0.120	0.02	24.03	24.80	1.194	0.143	22.3
Right cheek	RC3+SO55	600/1880	1:1	0.453	0.14	24.03	24.80	1.194	0.541	22.3
Right tilted	RC3+SO55	600/1880	1:1	0.082	0.12	24.03	24.80	1.194	0.098	22.3
Body worn Test data with cover closed with sensor on (Separate 15mm)										
Front side	RC3+SO32	600/1880	1:1	0.132	0.02	20.07	20.80	1.183	0.156	22.3
Back side	RC3+SO32	600/1880	1:1	0.360	-0.07	20.07	20.80	1.183	0.426	22.3
Body worn Test data with cover closed with sensor off (Separate 19mm)										
Front side	RC3+SO32	600/1880	1:1	0.274	-0.01	24.03	24.80	1.194	0.327	22.3
Back side	RC3+SO32	600/1880	1:1	0.716	-0.14	24.03	24.80	1.194	0.855	22.3
Back side	RC3+SO32	25/1851.25	1:1	0.702	0.09	24.11	24.80	1.172	0.823	22.3
Back side	RC3+SO32	1175/1908.75	1:1	0.616	0.13	24.18	24.80	1.153	0.711	22.3
Hotspot Test data with cover closed with sensor on (Separate 10mm)										
Front side	RC3+SO32	600/1880	1:1	0.189	-0.02	20.07	20.80	1.183	0.224	22.3
Back side	RC3+SO32	600/1880	1:1	0.622	-0.14	20.07	20.80	1.183	0.736	22.3
Back side	EVDO RTAP 153.6Kbps	600/1880	1:1	0.570	0.12	20.13	20.80	1.167	0.665	22.3
Back side	EVDO RETAP 4096Bits	600/1880	1:1	0.566	0.02	20.17	20.80	1.156	0.654	22.3
Left side	RC3+SO32	600/1880	1:1	0.179	-0.03	20.07	20.80	1.183	0.212	22.3
Right side	RC3+SO32	600/1880	1:1	0.090	0.03	20.07	20.80	1.183	0.106	22.3
Bottom side	RC3+SO32	600/1880	1:1	0.032	0.16	20.07	20.80	1.183	0.038	22.3
Hotspot Test data with cover closed with sensor off (Separate 19mm)										
Front side	RC3+SO32	600/1880	1:1	0.274	-0.01	24.03	24.80	1.194	0.327	22.3
Back side	RC3+SO32	600/1880	1:1	0.716	-0.14	24.03	24.80	1.194	0.855	22.3
Back side	RC3+SO32	25/1851.25	1:1	0.702	0.09	24.11	24.80	1.172	0.823	22.3
Back side	RC3+SO32	1175/1908.75	1:1	0.616	0.13	24.18	24.80	1.153	0.711	22.3
Back side	EVDO RTAP 153.6Kbps	600/1880	1:1	0.701	-0.07	24.07	24.80	1.183	0.829	22.3
Back side	EVDO RTAP 153.6Kbps	25/1851.25	1:1	0.708	0.12	24.07	24.80	1.183	0.838	22.3
Back side	EVDO RTAP 153.6Kbps	1175/1908.75	1:1	0.623	0.10	24.26	24.80	1.132	0.705	22.3
Back side	EVDO RETAP 4096Bits	600/1880	1:1	0.703	-0.16	24.09	24.80	1.178	0.828	22.3
Back side	EVDO RETAP 4096Bits	25/1851.25	1:1	0.712	0.10	24.05	24.80	1.189	0.846	22.3
Back side	EVDO RETAP 4096Bits	1175/1908.75	1:1	0.633	-0.12	24.23	24.80	1.140	0.722	22.3
Left side	RC3+SO32	600/1880	1:1	0.426	0.09	24.03	24.80	1.194	0.509	22.3
Right side	RC3+SO32	600/1880	1:1	0.161	0.17	24.03	24.80	1.194	0.192	22.3
Bottom side	RC3+SO32	600/1880	1:1	0.317	-0.06	24.03	24.80	1.194	0.378	22.3
Body worn Test data with cover opened with sensor on (Separate 15mm)										
Front side	RC3+SO32	600/1880	1:1	0.263	-0.11	20.07	20.80	1.183	0.311	22.3
Back side	RC3+SO32	600/1880	1:1	0.380	0.16	20.07	20.80	1.183	0.450	22.3
Body worn Test data with cover opened with sensor off (Separate 19mm)										
Front side	RC3+SO32	600/1880	1:1	0.524	-0.06	24.03	24.80	1.194	0.626	22.3
Back side	RC3+SO32	600/1880	1:1	0.676	0.11	24.03	24.80	1.194	0.807	22.3
Back side	RC3+SO32	25/1851.25	1:1	0.581	-0.09	24.11	24.80	1.172	0.681	22.3
Back side	RC3+SO32	1175/1908.75	1:1	0.547	-0.17	24.18	24.80	1.153	0.631	22.3
Hotspot Test data with cover opened with sensor on (Separate 10mm)										
Front side	RC3+SO32	600/1880	1:1	0.403	0.15	20.07	20.80	1.183	0.477	22.3
Back side	RC3+SO32	600/1880	1:1	0.572	-0.01	20.07	20.80	1.183	0.677	22.3
Back side	EVDO RTAP 153.6Kbps	600/1880	1:1	0.495	-0.02	20.13	20.80	1.167	0.578	22.3
Back side	EVDO RETAP 4096Bits	600/1880	1:1	0.489	0.18	20.17	20.80	1.156	0.565	22.3
Left side	RC3+SO32	600/1880	1:1	0.264	-0.02	20.07	20.80	1.183	0.312	22.3
Right side	RC3+SO32	600/1880	1:1	0.073	0.00	20.07	20.80	1.183	0.086	22.3



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Bottom side	RC3+SO32	600/1880	1:1	0.164	-0.11	20.07	20.80	1.183	0.194	22.3
Hotspot Test data with cover opened with sensor off (Separate 19mm)										
Front side	RC3+SO32	600/1880	1:1	0.524	-0.06	24.03	24.80	1.194	0.626	22.3
Back side	RC3+SO32	600/1880	1:1	0.676	0.11	24.03	24.80	1.194	0.807	22.3
Back side	RC3+SO32	25/1851.25	1:1	0.581	-0.09	24.11	24.80	1.172	0.681	22.3
Back side	RC3+SO32	1175/1908.75	1:1	0.547	-0.17	24.18	24.80	1.153	0.631	22.3
Back side	EVDO RTAP 153.6Kbps	600/1880	1:1	0.581	0.00	24.07	24.80	1.183	0.687	22.3
Back side	EVDO RETAP 4096Bits	600/1880	1:1	0.574	-0.08	24.09	24.80	1.178	0.676	22.3
Left side	RC3+SO32	600/1880	1:1	0.389	0.13	24.03	24.80	1.194	0.464	22.3
Right side	RC3+SO32	600/1880	1:1	0.142	0.00	24.03	24.80	1.194	0.170	22.3
Bottom side	RC3+SO32	600/1880	1:1	0.300	0.08	24.03	24.80	1.194	0.358	22.3

Table 20: SAR of CDMA BC1 for Head and Body.

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
- 2) Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.



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8.3.8 SAR Result of CDMA BC10

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test data										
Left cheek	RC3+SO55	580/820.5	1:1	0.324	-0.14	23.11	24.80	1.476	0.478	22.1
Left tilted	RC3+SO55	580/820.5	1:1	0.168	0.16	23.11	24.80	1.476	0.248	22.1
Right cheek	RC3+SO55	580/820.5	1:1	0.367	-0.07	23.11	24.80	1.476	0.542	22.1
Right tilted	RC3+SO55	580/820.5	1:1	0.176	-0.04	23.11	24.80	1.476	0.260	22.1
Body worn Test data with cover closed(Separate 15mm)										
Front side	RC3+SO32	684/823.1	1:1	0.047	0.05	23.21	24.80	1.442	0.068	22.1
Back side	RC3+SO32	580/820.5	1:1	0.174	0.03	23.21	24.80	1.442	0.251	22.1
Hotspot Test data with cover closed(Separate 10mm)										
Front side	RC3+SO32	580/820.5	1:1	0.058	0.02	23.21	24.80	1.442	0.084	22.1
Back side	RC3+SO32	580/820.5	1:1	0.270	0.16	23.21	24.80	1.442	0.389	22.1
Back side	EVDO RTAP 153.6Kbps	580/820.5	1:1	0.258	0.01	23.31	24.80	1.409	0.364	22.1
Back side	EVDO RETAP 4096Bits	580/820.5	1:1	0.259	0.01	23.32	24.80	1.406	0.364	22.1
Left side	RC3+SO32	580/820.5	1:1	0.032	0.08	23.21	24.80	1.442	0.046	22.1
Right side	RC3+SO32	580/820.5	1:1	0.184	0.04	23.21	24.80	1.442	0.265	22.1
Bottom side	RC3+SO32	580/820.5	1:1	0.149	0.01	23.21	24.80	1.442	0.215	22.1
Body worn Test data with cover opened(Separate 15mm)										
Front side	RC3+SO32	684/823.1	1:1	0.039	-0.12	23.21	24.80	1.442	0.056	22.1
Back side	RC3+SO32	580/820.5	1:1	0.147	0.17	23.21	24.80	1.442	0.212	22.1
Hotspot Test data with cover opened(Separate 10mm)										
Front side	RC3+SO32	580/820.5	1:1	0.208	-0.14	23.21	24.80	1.442	0.300	22.1
Back side	RC3+SO32	580/820.5	1:1	0.257	0.04	23.21	24.80	1.442	0.371	22.1
Back side	EVDO RTAP 153.6Kbps	580/820.5	1:1	0.255	0.02	23.31	24.80	1.409	0.359	22.1
Back side	EVDO RETAP 4096Bits	580/820.5	1:1	0.253	-0.03	23.32	24.80	1.406	0.356	22.1
Left side	RC3+SO32	580/820.5	1:1	0.115	-0.19	23.21	24.80	1.442	0.166	22.1
Right side	RC3+SO32	580/820.5	1:1	0.251	0.10	23.21	24.80	1.442	0.362	22.1
Bottom side	RC3+SO32	580/820.5	1:1	0.065	0.17	23.21	24.80	1.442	0.094	22.1

Table 21: SAR of CDMA BC10 for Head and Body.

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
- 2) Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.



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8.3.9 SAR Result of LTE Band 2

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_0	18900/1880	1:1	0.498	0.08	23.29	24.00	1.178	0.586	22.3
Left tilted	20	QPSK 1RB_0	18900/1880	1:1	0.138	-0.06	23.29	24.00	1.178	0.163	22.3
Right cheek	20	QPSK 1RB_0	18900/1880	1:1	0.448	0.13	23.29	24.00	1.178	0.528	22.3
Right tilted	20	QPSK 1RB_0	18900/1880	1:1	0.108	-0.03	23.29	24.00	1.178	0.127	22.3
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_0	18900/1880	1:1	0.489	0.18	22.46	23.00	1.132	0.554	22.3
Left tilted	20	QPSK 50RB_0	18900/1880	1:1	0.117	0.08	22.46	23.00	1.132	0.132	22.3
Right cheek	20	QPSK 50RB_0	18900/1880	1:1	0.404	-0.08	22.46	23.00	1.132	0.457	22.3
Right tilted	20	QPSK 50RB_0	18900/1880	1:1	0.091	0.14	22.46	23.00	1.132	0.103	22.3
Body worn Test data with cover closed with sensor on (Separate 15mm 1RB)											
Front side	20	QPSK 1RB_0	18900/1880	1:1	0.209	-0.19	21.50	22.50	1.259	0.263	22.3
Back side	20	QPSK 1RB_0	18900/1880	1:1	0.559	0.13	21.50	22.50	1.259	0.704	22.3
Body worn Test data with cover closed with sensor on (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_0	18900/1880	1:1	0.167	0.05	20.58	21.50	1.236	0.206	22.3
Back side	20	QPSK 50RB_0	18900/1880	1:1	0.441	-0.10	20.58	21.50	1.236	0.545	22.3
Body worn Test data with cover closed with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	18900/1880	1:1	0.211	0.11	23.29	24.00	1.178	0.248	22.3
Back side	20	QPSK 1RB_0	18900/1880	1:1	0.630	0.00	23.29	24.00	1.178	0.742	22.3
Body worn Test data with cover closed with sensor on (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_0	18900/1880	1:1	0.189	0.19	22.46	23.00	1.132	0.214	22.3
Back side	20	QPSK 50RB_0	18900/1880	1:1	0.497	0.02	22.46	23.00	1.132	0.563	22.3
Hotspot Test data with cover closed with sensor on (Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	18900/1880	1:1	0.300	-0.14	21.50	22.50	1.259	0.378	22.3
Back side	20	QPSK 1RB_0	18900/1880	1:1	0.852	0.09	21.50	22.50	1.259	1.073	22.3
Left side	20	QPSK 1RB_0	18900/1880	1:1	0.351	-0.07	21.50	22.50	1.259	0.442	22.3
Right side	20	QPSK 1RB_0	18900/1880	1:1	0.131	-0.12	21.50	22.50	1.259	0.165	22.3
Bottom side	20	QPSK 1RB_0	18900/1880	1:1	0.276	-0.14	21.50	22.50	1.259	0.347	22.3
Back side	20	QPSK 1RB_50	18700/1860	1:1	0.971	0.17	21.20	22.50	1.349	1.310	22.3
Back side-repeated	20	QPSK 1RB_50	18700/1860	1:1	0.936	-0.01	21.20	22.50	1.349	1.263	22.3
Back side	20	QPSK 1RB_50	19100/1900	1:1	0.813	0.14	21.45	22.50	1.274	1.035	22.3
Hotspot Test data with cover closed with sensor on (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	18900/1880	1:1	0.238	-0.18	20.58	21.50	1.236	0.294	22.3
Back side	20	QPSK 50RB_0	18900/1880	1:1	0.701	0.14	20.58	21.50	1.236	0.866	22.3
Left side	20	QPSK 50RB_0	18900/1880	1:1	0.282	0.00	20.58	21.50	1.236	0.349	22.3
Right side	20	QPSK 50RB_0	18900/1880	1:1	0.111	-0.19	20.58	21.50	1.236	0.137	22.3
Bottom side	20	QPSK 50RB_0	18900/1880	1:1	0.218	-0.18	20.58	21.50	1.236	0.269	22.3
Back side	20	QPSK 50RB_50	18700/1860	1:1	0.776	0.15	20.33	21.50	1.309	1.016	22.3
Back side	20	QPSK 50RB_50	19100/1900	1:1	0.652	-0.17	20.57	21.50	1.239	0.808	22.3
Hotspot Test data with cover closed with sensor on (Separate 10mm 100%RB)											
Back side	20	QPSK 100RB_0	18900/1880	1:1	0.704	0.11	20.39	21.50	1.291	0.909	22.3
Hotspot Test data with cover closed with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	18900/1880	1:1	0.211	0.11	23.29	24.00	1.178	0.248	22.3
Back side	20	QPSK 1RB_0	18900/1880	1:1	0.630	0.00	23.29	24.00	1.178	0.742	22.3
Left side	20	QPSK 1RB_0	18900/1880	1:1	0.218	0.04	23.29	24.00	1.178	0.257	22.3
Right side	20	QPSK 1RB_0	18900/1880	1:1	0.109	-0.08	23.29	24.00	1.178	0.128	22.3
Bottom side	20	QPSK 1RB_0	18900/1880	1:1	0.210	-0.18	23.29	24.00	1.178	0.247	22.3
Hotspot Test data with cover closed with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_0	18900/1880	1:1	0.189	0.19	22.46	23.00	1.132	0.214	22.3
Back side	20	QPSK 50RB_0	18900/1880	1:1	0.497	0.02	22.46	23.00	1.132	0.563	22.3



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Left side	20	QPSK 50RB_0	18900/1880	1:1	0.179	0.08	22.46	23.00	1.132	0.203	22.3
Right side	20	QPSK 50RB_0	18900/1880	1:1	0.094	-0.05	22.46	23.00	1.132	0.106	22.3
Bottom side	20	QPSK 50RB_0	18900/1880	1:1	0.168	0.00	22.46	23.00	1.132	0.190	22.3
Body worn Test data with cover opened with sensor on (Separate 15mm 1RB)											
Front side	20	QPSK 1RB_0	18900/1880	1:1	0.372	-0.11	21.50	22.50	1.259	0.468	22.3
Back side	20	QPSK 1RB_0	18900/1880	1:1	0.536	-0.14	21.50	22.50	1.259	0.675	22.3
Body worn Test data with cover opened with sensor on (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_0	18900/1880	1:1	0.331	0.02	20.58	21.50	1.236	0.409	22.3
Back side	20	QPSK 50RB_0	18900/1880	1:1	0.454	0.16	20.58	21.50	1.236	0.561	22.3
Body worn Test data with cover opened with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	18900/1880	1:1	0.372	-0.10	23.29	24.00	1.178	0.438	22.3
Back side	20	QPSK 1RB_0	18900/1880	1:1	0.524	0.08	23.29	24.00	1.178	0.617	22.3
Body worn Test data with cover opened with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_0	18900/1880	1:1	0.296	-0.15	22.46	23.00	1.132	0.335	22.3
Back side	20	QPSK 50RB_0	18900/1880	1:1	0.394	0.14	22.46	23.00	1.132	0.446	22.3
Hotspot Test data with cover opened with sensor on (Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	18900/1880	1:1	0.667	0.00	21.50	22.50	1.259	0.840	22.3
Back side	20	QPSK 1RB_0	18900/1880	1:1	0.835	-0.17	21.50	22.50	1.259	1.051	22.3
Left side	20	QPSK 1RB_0	18900/1880	1:1	0.495	-0.14	21.50	22.50	1.259	0.623	22.3
Right side	20	QPSK 1RB_0	18900/1880	1:1	0.123	0.06	21.50	22.50	1.259	0.155	22.3
Bottom side	20	QPSK 1RB_0	18900/1880	1:1	0.311	-0.14	21.50	22.50	1.259	0.392	22.3
Front side	20	QPSK 1RB_50	18700/1860	1:1	0.661	-0.11	21.20	22.50	1.349	0.892	22.3
Front side	20	QPSK 1RB_50	19100/1900	1:1	0.622	-0.19	21.45	22.50	1.274	0.792	22.3
Back side	20	QPSK 1RB_50	18700/1860	1:1	0.949	-0.05	21.20	22.50	1.349	1.280	22.3
Back side	20	QPSK 1RB_50	19100/1900	1:1	0.830	0.11	21.45	22.50	1.274	1.057	22.3
Hotspot Test data with cover opened with sensor on (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	18900/1880	1:1	0.524	0.15	20.58	21.50	1.236	0.648	22.3
Back side	20	QPSK 50RB_0	18900/1880	1:1	0.709	0.09	20.58	21.50	1.236	0.876	22.3
Left side	20	QPSK 50RB_0	18900/1880	1:1	0.393	0.03	20.58	21.50	1.236	0.486	22.3
Right side	20	QPSK 50RB_0	18900/1880	1:1	0.098	-0.18	20.58	21.50	1.236	0.121	22.3
Bottom side	20	QPSK 50RB_0	18900/1880	1:1	0.250	-0.17	20.58	21.50	1.236	0.309	22.3
Back side	20	QPSK 50RB_50	18700/1860	1:1	0.750	-0.02	20.33	21.50	1.309	0.982	22.3
Back side	20	QPSK 50RB_50	19100/1900	1:1	0.672	0.02	20.57	21.50	1.239	0.832	22.3
Hotspot Test data with cover opened with sensor on (Separate 10mm 100%RB)											
Front side	20	QPSK 100RB_0	18900/1880	1:1	0.517	0.15	20.39	21.50	1.291	0.668	22.3
Back side	20	QPSK 100RB_0	18900/1880	1:1	0.703	0.13	20.39	21.50	1.291	0.908	22.3
Hotspot Test data with cover opened with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	18900/1880	1:1	0.372	-0.10	23.29	24.00	1.178	0.438	22.3
Back side	20	QPSK 1RB_0	18900/1880	1:1	0.524	0.08	23.29	24.00	1.178	0.617	22.3
Left side	20	QPSK 1RB_0	18900/1880	1:1	0.357	0.05	23.29	24.00	1.178	0.420	22.3
Right side	20	QPSK 1RB_0	18900/1880	1:1	0.103	-0.11	23.29	24.00	1.178	0.121	22.3
Bottom side	20	QPSK 1RB_0	18900/1880	1:1	0.196	-0.11	23.29	24.00	1.178	0.231	22.3
Hotspot Test data with cover opened with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_0	18900/1880	1:1	0.296	-0.15	22.46	23.00	1.132	0.335	22.3
Back side	20	QPSK 50RB_0	18900/1880	1:1	0.394	0.14	22.46	23.00	1.132	0.446	22.3
Left side	20	QPSK 50RB_0	18900/1880	1:1	0.276	0.12	22.46	23.00	1.132	0.313	22.3
Right side	20	QPSK 50RB_0	18900/1880	1:1	0.091	0.00	22.46	23.00	1.132	0.103	22.3
Bottom side	20	QPSK 50RB_0	18900/1880	1:1	0.164	0.14	22.46	23.00	1.132	0.186	22.3

Table 22: 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.



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- 2) Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
- $\leq 0.8 \text{ W/kg}$ for 1-g or 2.0 W/kg for 10-g respectively, when the transmission band is $\leq 100 \text{ MHz}$.
 - $\leq 0.6 \text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4 \text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200 \text{ MHz}$.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Back Side	18700/1860	0.971	0.936	1.037	N/A	N/A
Note: 1) When the original highest measured SAR is $\geq 0.80 \text{ W/kg}$, 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 $\geq 1.45 \text{ W/kg}$ (~ 10% from the 1-g SAR limit).						
3) A third repeated measurement was performed only if the original, first or second repeated measurement was $\geq 1.5 \text{ W/kg}$ 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 $< 0.80 \text{ W/kg}$						

Table 23: SAR Measurement Variability Results.



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8.3.10 SAR Result of LTE Band 4

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_0	20175/1732.5	1:1	0.134	-0.13	24.28	25.00	1.180	0.158	22.2
Left tilted	20	QPSK 1RB_0	20175/1732.5	1:1	0.028	-0.06	24.28	25.00	1.180	0.033	22.2
Right cheek	20	QPSK 1RB_0	20175/1732.5	1:1	0.194	0.06	24.28	25.00	1.180	0.229	22.2
Right tilted	20	QPSK 1RB_0	20175/1732.5	1:1	0.026	0.16	24.28	25.00	1.180	0.031	22.2
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_0	20175/1732.5	1:1	0.134	0.06	23.38	24.00	1.153	0.155	22.2
Left tilted	20	QPSK 50RB_0	20175/1732.5	1:1	0.026	0.04	23.38	24.00	1.153	0.030	22.2
Right cheek	20	QPSK 50RB_0	20175/1732.5	1:1	0.164	0.09	23.38	24.00	1.153	0.189	22.2
Right tilted	20	QPSK 50RB_0	20175/1732.5	1:1	0.022	0.13	23.38	24.00	1.153	0.025	22.2
Body worn Test data with cover closed with sensor on (Separate 15mm 1RB)											
Front side	20	QPSK 1RB_0	20175/1732.5	1:1	0.192	-0.12	21.51	22.50	1.256	0.241	22.2
Back side	20	QPSK 1RB_0	20175/1732.5	1:1	0.471	0.09	21.51	22.50	1.256	0.592	22.2
Body worn Test data with cover closed with sensor on (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_0	20175/1732.5	1:1	0.158	0.01	20.61	21.50	1.227	0.194	22.2
Back side	20	QPSK 50RB_0	20175/1732.5	1:1	0.402	-0.16	20.61	21.50	1.227	0.493	22.2
Body worn Test data with cover closed with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	20175/1732.5	1:1	0.173	0.10	24.28	25.00	1.180	0.204	22.2
Back side	20	QPSK 1RB_0	20175/1732.5	1:1	0.418	0.11	24.28	25.00	1.180	0.493	22.2
Body worn Test data with cover closed with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_0	20175/1732.5	1:1	0.179	-0.17	23.38	24.00	1.153	0.206	22.2
Back side	20	QPSK 50RB_0	20175/1732.5	1:1	0.458	0.08	23.38	24.00	1.153	0.528	22.2
Hotspot Test data with cover closed with sensor on (Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	20175/1732.5	1:1	0.281	-0.12	21.51	22.50	1.256	0.353	22.2
Back side	20	QPSK 1RB_0	20175/1732.5	1:1	0.817	-0.19	21.51	22.50	1.256	1.026	22.2
Left side	20	QPSK 1RB_0	20175/1732.5	1:1	0.265	0.19	21.51	22.50	1.256	0.333	22.2
Right side	20	QPSK 1RB_0	20175/1732.5	1:1	0.091	-0.05	21.51	22.50	1.256	0.114	22.2
Bottom side	20	QPSK 1RB_0	20175/1732.5	1:1	0.351	0.16	21.51	22.50	1.256	0.441	22.2
Back side	20	QPSK 1RB_50	20050/1720	1:1	0.723	-0.15	21.39	22.50	1.291	0.934	22.2
Back side	20	QPSK 1RB_99	20300/1745	1:1	1.080	0.19	21.42	22.50	1.282	1.385	22.2
Back side-repeated	20	QPSK 1RB_99	20300/1745	1:1	0.983	-0.01	21.42	22.50	1.282	1.261	22.2
Hotspot Test data with cover closed with sensor on (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	20175/1732.5	1:1	0.240	-0.10	20.61	21.50	1.227	0.295	22.2
Back side	20	QPSK 50RB_0	20175/1732.5	1:1	0.693	0.06	20.61	21.50	1.227	0.851	22.2
Left side	20	QPSK 50RB_0	20175/1732.5	1:1	0.226	0.07	20.61	21.50	1.227	0.277	22.2
Right side	20	QPSK 50RB_0	20175/1732.5	1:1	0.069	-0.19	20.61	21.50	1.227	0.085	22.2
Bottom side	20	QPSK 50RB_0	20175/1732.5	1:1	0.354	-0.01	20.61	21.50	1.227	0.435	22.2
Back side	20	QPSK 50RB_0	20050/1720	1:1	0.629	-0.12	20.44	21.50	1.276	0.803	22.2
Back side	20	QPSK 50RB_25	20300/1745	1:1	0.805	-0.18	20.51	21.50	1.256	1.011	22.2
Hotspot Test data with cover closed with sensor on (Separate 10mm 100%RB)											
Back side	20	QPSK 100RB_0	20175/1732.5	1:1	0.714	0.01	20.37	21.50	1.297	0.926	22.2
Hotspot Test data with cover closed with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	20175/1732.5	1:1	0.173	0.10	24.28	25.00	1.180	0.204	22.2
Back side	20	QPSK 1RB_0	20175/1732.5	1:1	0.418	0.11	24.28	25.00	1.180	0.493	22.2
Left side	20	QPSK 1RB_0	20175/1732.5	1:1	0.123	-0.07	24.28	25.00	1.180	0.145	22.2
Right side	20	QPSK 1RB_0	20175/1732.5	1:1	0.056	-0.14	24.28	25.00	1.180	0.066	22.2
Bottom side	20	QPSK 1RB_0	20175/1732.5	1:1	0.222	-0.19	24.28	25.00	1.180	0.262	22.2
Hotspot Test data with cover closed with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_0	20175/1732.5	1:1	0.179	-0.17	23.38	24.00	1.153	0.206	22.2
Back side	20	QPSK 50RB_0	20175/1732.5	1:1	0.458	0.08	23.38	24.00	1.153	0.528	22.2



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Left side	20	QPSK 50RB_0	20175/1732.5	1:1	0.141	-0.07	23.38	24.00	1.153	0.163	22.2
Right side	20	QPSK 50RB_0	20175/1732.5	1:1	0.056	0.10	23.38	24.00	1.153	0.065	22.2
Bottom side	20	QPSK 50RB_0	20175/1732.5	1:1	0.229	0.19	23.38	24.00	1.153	0.264	22.2
Body worn Test data with cover opened with sensor on (Separate 15mm 1RB)											
Front side	20	QPSK 1RB_0	20175/1732.5	1:1	0.337	-0.10	21.51	22.50	1.256	0.423	22.2
Back side	20	QPSK 1RB_0	20175/1732.5	1:1	0.448	-0.17	21.51	22.50	1.256	0.563	22.2
Body worn Test data with cover opened with sensor on (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_0	20175/1732.5	1:1	0.292	-0.17	20.61	21.50	1.227	0.358	22.2
Back side	20	QPSK 50RB_0	20175/1732.5	1:1	0.383	-0.04	20.61	21.50	1.227	0.470	22.2
Body worn Test data with cover opened with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	20175/1732.5	1:1	0.216	0.11	24.28	25.00	1.180	0.255	22.2
Back side	20	QPSK 1RB_0	20175/1732.5	1:1	0.431	-0.12	24.28	25.00	1.180	0.509	22.2
Body worn Test data with cover opened with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_0	20175/1732.5	1:1	0.188	0.13	23.38	24.00	1.153	0.217	22.2
Back side	20	QPSK 50RB_0	20175/1732.5	1:1	0.298	-0.16	23.38	24.00	1.153	0.344	22.2
Hotspot Test data with cover opened with sensor on (Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	20175/1732.5	1:1	0.590	-0.05	21.51	22.50	1.256	0.741	22.2
Back side	20	QPSK 1RB_0	20175/1732.5	1:1	0.794	-0.16	21.51	22.50	1.256	0.997	22.2
Left side	20	QPSK 1RB_0	20175/1732.5	1:1	0.284	0.09	21.51	22.50	1.256	0.357	22.2
Right side	20	QPSK 1RB_0	20175/1732.5	1:1	0.069	0.11	21.51	22.50	1.256	0.087	22.2
Bottom side	20	QPSK 1RB_0	20175/1732.5	1:1	0.413	-0.12	21.51	22.50	1.256	0.519	22.2
Back side	20	QPSK 1RB_50	20050/1720	1:1	0.618	0.10	21.39	22.50	1.291	0.798	22.2
Back side	20	QPSK 1RB_99	20300/1745	1:1	0.968	0.07	21.42	22.50	1.282	1.241	22.2
Hotspot Test data with cover opened with sensor on (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	20175/1732.5	1:1	0.514	-0.01	20.61	21.50	1.227	0.631	22.2
Back side	20	QPSK 50RB_0	20175/1732.5	1:1	0.681	0.09	20.61	21.50	1.227	0.836	22.2
Left side	20	QPSK 50RB_0	20175/1732.5	1:1	0.242	0.06	20.61	21.50	1.227	0.297	22.2
Right side	20	QPSK 50RB_0	20175/1732.5	1:1	0.058	-0.19	20.61	21.50	1.227	0.071	22.2
Bottom side	20	QPSK 50RB_0	20175/1732.5	1:1	0.324	-0.12	20.61	21.50	1.227	0.398	22.2
Back side	20	QPSK 50RB_0	20050/1720	1:1	0.557	0.18	20.44	21.50	1.276	0.711	22.2
Back side	20	QPSK 50RB_25	20300/1745	1:1	0.810	0.10	20.51	21.50	1.256	1.017	22.2
Hotspot Test data with cover opened with sensor on (Separate 10mm 100%RB)											
Back side	20	QPSK 100RB_0	20175/1732.5	1:1	0.700	-0.05	20.37	21.50	1.297	0.908	22.2
Hotspot Test data with cover opened with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	20175/1732.5	1:1	0.216	0.11	24.28	25.00	1.180	0.255	22.2
Back side	20	QPSK 1RB_0	20175/1732.5	1:1	0.431	-0.12	24.28	25.00	1.180	0.509	22.2
Left side	20	QPSK 1RB_0	20175/1732.5	1:1	0.212	0.04	24.28	25.00	1.180	0.250	22.2
Right side	20	QPSK 1RB_0	20175/1732.5	1:1	0.068	-0.19	24.28	25.00	1.180	0.080	22.2
Bottom side	20	QPSK 1RB_0	20175/1732.5	1:1	0.340	-0.07	24.28	25.00	1.180	0.401	22.2
Hotspot Test data with cover opened with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_0	20175/1732.5	1:1	0.188	0.13	23.38	24.00	1.153	0.217	22.2
Back side	20	QPSK 50RB_0	20175/1732.5	1:1	0.298	-0.16	23.38	24.00	1.153	0.344	22.2
Left side	20	QPSK 50RB_0	20175/1732.5	1:1	0.188	0.16	23.38	24.00	1.153	0.217	22.2
Right side	20	QPSK 50RB_0	20175/1732.5	1:1	0.053	-0.14	23.38	24.00	1.153	0.061	22.2
Bottom side	20	QPSK 50RB_0	20175/1732.5	1:1	0.278	-0.19	23.38	24.00	1.153	0.321	22.2

Table 24: 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 KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.



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- ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
- ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Back Side	20300/1745	1.080	0.983	1.099	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 ($\sim 10\%$ 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.



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8.3.11 SAR Result of LTE Band 5

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test data(1RB)											
Left cheek	10	QPSK 1RB_0	20450/829	1:1	0.341	0.03	24.35	25.00	1.161	0.396	22.1
Left tilted	10	QPSK 1RB_0	20450/829	1:1	0.171	0.18	24.35	25.00	1.161	0.199	22.1
Right cheek	10	QPSK 1RB_0	20450/829	1:1	0.346	0.04	24.35	25.00	1.161	0.402	22.1
Right tilted	10	QPSK 1RB_0	20450/829	1:1	0.172	0.14	24.35	25.00	1.161	0.200	22.1
Head Test data(50%RB)											
Left cheek	10	QPSK 25RB_0	20450/829	1:1	0.272	0.04	23.25	24.00	1.189	0.323	22.1
Left tilted	10	QPSK 25RB_0	20450/829	1:1	0.138	-0.06	23.25	24.00	1.189	0.164	22.1
Right cheek	10	QPSK 25RB_0	20450/829	1:1	0.248	-0.06	23.25	24.00	1.189	0.295	22.1
Right tilted	10	QPSK 25RB_0	20450/829	1:1	0.128	-0.12	23.25	24.00	1.189	0.152	22.1
Body worn Test data with cover closed(Separate 15mm 1RB)											
Front side	10	QPSK 1RB_0	20450/829	1:1	0.194	0.15	24.35	25.00	1.161	0.225	22.1
Back side	10	QPSK 1RB_0	20450/829	1:1	0.740	0.12	24.35	25.00	1.161	0.859	22.1
Back side	10	QPSK 1RB_0	20525/836.5	1:1	0.672	-0.06	24.16	25.00	1.213	0.815	22.1
Back side	10	QPSK 1RB_0	20600/844	1:1	0.711	-0.11	24.33	25.00	1.167	0.830	22.1
Body worn Test data with cover closed (Separate 15mm 50%RB)											
Front side	10	QPSK 25RB_0	20450/829	1:1	0.208	0.12	23.25	24.00	1.189	0.247	22.1
Back side	10	QPSK 25RB_0	20450/829	1:1	0.674	0.13	23.25	24.00	1.189	0.801	22.1
Back side	10	QPSK 25RB_13	20525/836.5	1:1	0.607	0.05	23.21	24.00	1.199	0.728	22.1
Back side	10	QPSK 25RB_13	20600/844	1:1	0.617	0.09	23.17	24.00	1.211	0.747	22.1
Body worn Test data with cover closed (Separate 15mm 100%RB)											
Back side	10	QPSK 50RB_0	20525/836.5	1:1	0.704	0.17	23.19	24.00	1.205	0.848	22.1
Hotspot Test data with cover closed(Separate 10mm 1RB)											
Front side	10	QPSK 1RB_0	20450/829	1:1	0.214	0.11	24.35	25.00	1.161	0.249	22.1
Back side	10	QPSK 1RB_0	20450/829	1:1	0.946	-0.01	24.35	25.00	1.161	1.099	22.1
Back side-repeated	10	QPSK 1RB_0	20450/829	1:1	0.911	-0.06	24.35	25.00	1.161	1.058	22.1
Left side	10	QPSK 1RB_0	20450/829	1:1	0.415	-0.05	24.35	25.00	1.161	0.482	22.1
Right side	10	QPSK 1RB_0	20450/829	1:1	0.293	0.14	24.35	25.00	1.161	0.340	22.1
Bottom side	10	QPSK 1RB_0	20450/829	1:1	0.086	0.02	24.35	25.00	1.161	0.100	22.1
Back side	10	QPSK 1RB_0	20525/836.5	1:1	0.724	0.06	24.16	25.00	1.213	0.878	22.1
Back side	10	QPSK 1RB_0	20600/844	1:1	0.733	-0.04	24.33	25.00	1.167	0.855	22.1
Hotspot Test data with cover closed (Separate 10mm 50%RB)											
Front side	10	QPSK 25RB_0	20450/829	1:1	0.229	-0.04	23.25	24.00	1.189	0.272	22.1
Back side	10	QPSK 25RB_0	20450/829	1:1	0.894	0.07	23.25	24.00	1.189	1.063	22.1
Left side	10	QPSK 25RB_0	20450/829	1:1	0.421	-0.14	23.25	24.00	1.189	0.500	22.1
Right side	10	QPSK 25RB_0	20450/829	1:1	0.295	0.07	23.25	24.00	1.189	0.351	22.1
Bottom side	10	QPSK 25RB_0	20450/829	1:1	0.093	0.08	23.25	24.00	1.189	0.111	22.1
Back side	10	QPSK 25RB_13	20525/836.5	1:1	0.796	-0.02	23.21	24.00	1.199	0.955	22.1
Back side	10	QPSK 25RB_13	20600/844	1:1	0.767	0.19	23.17	24.00	1.211	0.929	22.1
Hotspot Test data with cover closed (Separate 10mm 100%RB)											
Back side	10	QPSK 50RB_0	20525/836.5	1:1	0.787	0.00	23.19	24.00	1.205	0.948	22.1
Body worn Test data with cover opened(Separate 15mm 1RB)											
Front side	10	QPSK 1RB_0	20450/829	1:1	0.159	-0.15	24.35	25.00	1.161	0.185	22.1
Back side	10	QPSK 1RB_0	20450/829	1:1	0.246	-0.10	24.35	25.00	1.161	0.286	22.1
Body worn Test data with cover opened (Separate 15mm 50%RB)											
Front side	10	QPSK 25RB_0	20450/829	1:1	0.134	0.07	23.25	24.00	1.189	0.159	22.1
Back side	10	QPSK 25RB_0	20450/829	1:1	0.197	-0.07	23.25	24.00	1.189	0.234	22.1
Hotspot Test data with cover opened(Separate 10mm 1RB)											
Front side	10	QPSK 1RB_0	20450/829	1:1	0.260	0.17	24.35	25.00	1.161	0.302	22.1
Back side	10	QPSK 1RB_0	20450/829	1:1	0.403	-0.07	24.35	25.00	1.161	0.468	22.1



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Left side	10	QPSK 1RB_0	20450/829	1:1	0.176	-0.07	24.35	25.00	1.161	0.204	22.1
Right side	10	QPSK 1RB_0	20450/829	1:1	0.294	-0.15	24.35	25.00	1.161	0.341	22.1
Bottom side	10	QPSK 1RB_0	20450/829	1:1	0.102	0.16	24.35	25.00	1.161	0.118	22.1
Hotspot Test data with cover opened (Separate 10mm 50%RB)											
Front side	10	QPSK 25RB_0	20450/829	1:1	0.253	-0.19	23.25	24.00	1.189	0.301	22.1
Back side	10	QPSK 25RB_0	20450/829	1:1	0.342	-0.06	23.25	24.00	1.189	0.406	22.1
Left side	10	QPSK 25RB_0	20450/829	1:1	0.147	-0.18	23.25	24.00	1.189	0.175	22.1
Right side	10	QPSK 25RB_0	20450/829	1:1	0.266	-0.07	23.25	24.00	1.189	0.316	22.1
Bottom side	10	QPSK 25RB_0	20450/829	1:1	0.097	0.13	23.25	24.00	1.189	0.115	22.1

Table 26: 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 KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Back Side	20450/829	0.946	0.911	1.038	N/A	N/A

Note: 1) When the original highest measured SAR is $\geq 0.80\text{ W/kg}$, 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 $\geq 1.45\text{ W/kg}$ ($\sim 10\%$ from the 1-g SAR limit).
 3) A third repeated measurement was performed only if the original, first or second repeated measurement was $\geq 1.5\text{ W/kg}$ 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 $< 0.80\text{ W/kg}$

Table 27: SAR Measurement Variability Results.





8.3.12 SAR Result of LTE Band 12

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test data(1RB)											
Left cheek	10	QPSK 1RB_0	23095/707.5	1:1	0.380	0.05	24.19	25.00	1.205	0.458	22.1
Left tilted	10	QPSK 1RB_0	23095/707.5	1:1	0.142	0.05	24.19	25.00	1.205	0.171	22.1
Right cheek	10	QPSK 1RB_0	23095/707.5	1:1	0.367	0.03	24.19	25.00	1.205	0.442	22.1
Right tilted	10	QPSK 1RB_0	23095/707.5	1:1	0.129	-0.05	24.19	25.00	1.205	0.155	22.1
Head Test data(50%RB)											
Left cheek	10	QPSK 25RB_0	23095/707.5	1:1	0.309	0.09	23.29	24.00	1.178	0.364	22.1
Left tilted	10	QPSK 25RB_0	23095/707.5	1:1	0.121	-0.02	23.29	24.00	1.178	0.142	22.1
Right cheek	10	QPSK 25RB_0	23095/707.5	1:1	0.289	-0.06	23.29	24.00	1.178	0.340	22.1
Right tilted	10	QPSK 25RB_0	23095/707.5	1:1	0.118	0.06	23.29	24.00	1.178	0.139	22.1
Body worn Test data with cover closed(Separate 15mm 1RB)											
Front side	10	QPSK 1RB_0	23095/707.5	1:1	0.249	0.02	24.19	25.00	1.205	0.300	22.1
Back side	10	QPSK 1RB_0	23095/707.5	1:1	0.670	-0.14	24.19	25.00	1.205	0.807	22.1
Back side	10	QPSK 1RB_0	23060/704	1:1	0.474	-0.06	24.17	25.00	1.211	0.574	22.1
Back side	10	QPSK 1RB_0	23130/711	1:1	0.791	0.04	24.04	25.00	1.247	0.987	22.1
Body worn Test data with cover closed (Separate 15mm 50%RB)											
Front side	10	QPSK 25RB_0	23095/707.5	1:1	0.206	0.02	23.29	24.00	1.178	0.243	22.1
Back side	10	QPSK 25RB_0	23095/707.5	1:1	0.593	0.03	23.29	24.00	1.178	0.698	22.1
Body worn Test data with cover closed (Separate 15mm 100%RB)											
Back side	10	QPSK 50RB_0	23095/707.5	1:1	0.559	0.09	23.29	24.00	1.178	0.658	22.1
Hotspot Test data with cover closed(Separate 10mm 1RB)											
Front side	10	QPSK 1RB_0	23095/707.5	1:1	0.339	-0.05	24.19	25.00	1.205	0.409	22.1
Back side	10	QPSK 1RB_0	23095/707.5	1:1	0.984	-0.17	24.19	25.00	1.205	1.186	22.1
Left side	10	QPSK 1RB_0	23095/707.5	1:1	0.353	0.04	24.19	25.00	1.205	0.425	22.1
Right side	10	QPSK 1RB_0	23095/707.5	1:1	0.408	0.02	24.19	25.00	1.205	0.492	22.1
Bottom side	10	QPSK 1RB_0	23095/707.5	1:1	0.139	-0.02	24.19	25.00	1.205	0.167	22.1
Back side	10	QPSK 1RB_0	23060/704	1:1	0.690	0.08	24.17	25.00	1.211	0.835	22.1
Back side	10	QPSK 1RB_0	23130/711	1:1	0.724	0.02	24.04	25.00	1.247	0.903	22.1
Back side-repeated	10	QPSK 1RB_0	23095/707.5	1:1	0.979	0.07	24.19	25.00	1.205	1.180	22.1
Hotspot Test data with cover closed (Separate 10mm 50%RB)											
Front side	10	QPSK 25RB_0	23095/707.5	1:1	0.276	0.16	23.29	24.00	1.178	0.325	22.1
Back side	10	QPSK 25RB_0	23095/707.5	1:1	0.733	0.00	23.29	24.00	1.178	0.863	22.1
Left side	10	QPSK 25RB_0	23095/707.5	1:1	0.472	0.00	23.29	24.00	1.178	0.556	22.1
Right side	10	QPSK 25RB_0	23095/707.5	1:1	0.341	-0.10	23.29	24.00	1.178	0.402	22.1
Bottom side	10	QPSK 25RB_0	23095/707.5	1:1	0.142	-0.01	23.29	24.00	1.178	0.167	22.1
Back side	10	QPSK 25RB_13	23060/704	1:1	0.745	0.09	23.27	24.00	1.183	0.881	22.1
Back side	10	QPSK 25RB_0	23130/711	1:1	0.744	0.04	23.23	24.00	1.194	0.888	22.1
Hotspot Test data with cover closed (Separate 10mm 100%RB)											
Back side	10	QPSK 50RB_0	23095/707.5	1:1	0.809	0.19	23.29	24.00	1.178	0.953	22.1
Body worn Test data with cover opened(Separate 15mm 1RB)											
Front side	10	QPSK 1RB_0	23095/707.5	1:1	0.211	-0.02	24.19	25.00	1.205	0.254	22.1
Back side	10	QPSK 1RB_0	23095/707.5	1:1	0.426	0.04	24.19	25.00	1.205	0.513	22.1
Body worn Test data with cover opened (Separate 15mm 50%RB)											
Front side	10	QPSK 25RB_0	23095/707.5	1:1	0.209	-0.15	23.29	24.00	1.178	0.246	22.1
Back side	10	QPSK 25RB_0	23095/707.5	1:1	0.452	-0.16	23.29	24.00	1.178	0.532	22.1
Hotspot Test data with cover opened(Separate 10mm 1RB)											
Front side	10	QPSK 1RB_0	23095/707.5	1:1	0.233	-0.12	24.19	25.00	1.205	0.281	22.1
Back side	10	QPSK 1RB_0	23095/707.5	1:1	0.614	0.02	24.19	25.00	1.205	0.740	22.1
Left side	10	QPSK 1RB_0	23095/707.5	1:1	0.139	-0.10	24.19	25.00	1.205	0.167	22.1
Right side	10	QPSK 1RB_0	23095/707.5	1:1	0.389	-0.05	24.19	25.00	1.205	0.469	22.1



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Bottom side	10	QPSK 1RB_0	23095/707.5	1:1	0.088	-0.03	24.19	25.00	1.205	0.106	22.1
Hotspot Test data with cover opened (Separate 10mm 50%RB)											
Front side	10	QPSK 25RB_0	23095/707.5	1:1	0.236	0.07	23.29	24.00	1.178	0.278	22.1
Back side	10	QPSK 25RB_0	23095/707.5	1:1	0.633	-0.06	23.29	24.00	1.178	0.745	22.1
Left side	10	QPSK 25RB_0	23095/707.5	1:1	0.159	-0.06	23.29	24.00	1.178	0.187	22.1
Right side	10	QPSK 25RB_0	23095/707.5	1:1	0.414	-0.04	23.29	24.00	1.178	0.488	22.1
Bottom side	10	QPSK 25RB_0	23095/707.5	1:1	0.106	-0.06	23.29	24.00	1.178	0.125	22.1

Table 28: SAR of LTE Band 12 for Head and Body.

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
- 2) Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Back side	23095/707.5	0.984	0.979	1.005	N/A	N/A

Note: 1) When the original highest measured SAR is $\geq 0.80\text{ W/kg}$, 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 $\geq 1.45\text{ W/kg}$ ($\sim 10\%$ from the 1-g SAR limit).

3) A third repeated measurement was performed only if the original, first or second repeated measurement was $\geq 1.5\text{ W/kg}$ 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 $< 0.80\text{ W/kg}$

Table 29: SAR Measurement Variability Results.



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8.3.13 SAR Result of LTE Band 13

Test position	BW	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test data(1RB)											
Left cheek	10	QPSK 1RB_0	23230/782	1:1	0.548	0.02	24.37	25.00	1.156	0.634	22.1
Left tilted	10	QPSK 1RB_0	23230/782	1:1	0.209	-0.06	24.37	25.00	1.156	0.242	22.1
Right cheek	10	QPSK 1RB_0	23230/782	1:1	0.621	-0.02	24.37	25.00	1.156	0.718	22.1
Right tilted	10	QPSK 1RB_0	23230/782	1:1	0.247	0.03	24.37	25.00	1.156	0.286	22.1
Head Test data(50%RB)											
Left cheek	10	QPSK 25RB_0	23230/782	1:1	0.451	0.03	23.35	24.00	1.161	0.524	22.1
Left tilted	10	QPSK 25RB_0	23230/782	1:1	0.236	0.04	23.35	24.00	1.161	0.274	22.1
Right cheek	10	QPSK 25RB_0	23230/782	1:1	0.519	-0.09	23.35	24.00	1.161	0.603	22.1
Right tilted	10	QPSK 25RB_0	23230/782	1:1	0.226	-0.15	23.35	24.00	1.161	0.262	22.1
Body worn Test data with cover closed(Separate 15mm 1RB)											
Front side	10	QPSK 1RB_0	23230/782	1:1	0.274	-0.02	24.37	25.00	1.156	0.317	22.1
Back side	10	QPSK 1RB_0	23230/782	1:1	0.748	-0.04	24.37	25.00	1.156	0.865	22.1
Body worn Test data with cover closed (Separate 15mm 50%RB)											
Front side	10	QPSK 25RB_0	23230/782	1:1	0.245	-0.02	23.35	24.00	1.161	0.285	22.1
Back side	10	QPSK 25RB_0	23230/782	1:1	0.709	0.01	23.35	24.00	1.161	0.823	22.1
Body worn Test data with cover closed (Separate 15mm 100%RB)											
Back side	10	QPSK 50RB_0	23230/782	1:1	0.630	0.03	23.10	24.00	1.230	0.775	22.1
Hotspot Test data with cover closed(Separate 10mm 1RB)											
Front side	10	QPSK 1RB_0	23230/782	1:1	0.276	0.04	24.37	25.00	1.156	0.319	22.1
Back side	10	QPSK 1RB_0	23230/782	1:1	0.858	0.14	24.37	25.00	1.156	0.992	22.1
Back side-repeated	10	QPSK 1RB_0	23230/782	1:1	0.851	-0.05	24.37	25.00	1.156	0.984	22.1
Left side	10	QPSK 1RB_0	23230/782	1:1	0.412	0.00	24.37	25.00	1.156	0.476	22.1
Right side	10	QPSK 1RB_0	23230/782	1:1	0.512	-0.15	24.37	25.00	1.156	0.592	22.1
Bottom side	10	QPSK 1RB_0	23230/782	1:1	0.146	-0.09	24.37	25.00	1.156	0.169	22.1
Hotspot Test data with cover closed (Separate 10mm 50%RB)											
Front side	10	QPSK 25RB_0	23230/782	1:1	0.274	-0.02	23.35	24.00	1.161	0.318	22.1
Back side	10	QPSK 25RB_0	23230/782	1:1	0.815	0.01	23.35	24.00	1.161	0.947	22.1
Left side	10	QPSK 25RB_0	23230/782	1:1	0.390	0.10	23.35	24.00	1.161	0.453	22.1
Right side	10	QPSK 25RB_0	23230/782	1:1	0.524	0.03	23.35	24.00	1.161	0.609	22.1
Bottom side	10	QPSK 25RB_0	23230/782	1:1	0.145	-0.06	23.35	24.00	1.161	0.168	22.1
Hotspot Test data with cover closed (Separate 10mm 100%RB)											
Back side	10	QPSK 50RB_0	23230/782	1:1	0.733	0.11	23.10	24.00	1.230	0.902	22.1
Body worn Test data with cover opened(Separate 15mm 1RB)											
Front side	10	QPSK 1RB_0	23230/782	1:1	0.204	-0.11	24.37	25.00	1.156	0.236	22.1
Back side	10	QPSK 1RB_0	23230/782	1:1	0.384	0.15	24.37	25.00	1.156	0.444	22.1
Body worn Test data with cover opened (Separate 15mm 50%RB)											
Front side	10	QPSK 25RB_0	23230/782	1:1	0.208	0.19	23.35	24.00	1.161	0.242	22.1
Back side	10	QPSK 25RB_0	23230/782	1:1	0.385	0.03	23.35	24.00	1.161	0.447	22.1
Hotspot Test data with cover opened(Separate 10mm 1RB)											
Front side	10	QPSK 1RB_0	23230/782	1:1	0.289	0.17	24.37	25.00	1.156	0.334	22.1
Back side	10	QPSK 1RB_0	23230/782	1:1	0.541	-0.14	24.37	25.00	1.156	0.625	22.1
Left side	10	QPSK 1RB_0	23230/782	1:1	0.232	0.04	24.37	25.00	1.156	0.268	22.1
Right side	10	QPSK 1RB_0	23230/782	1:1	0.533	-0.02	24.37	25.00	1.156	0.616	22.1
Bottom side	10	QPSK 1RB_0	23230/782	1:1	0.175	-0.13	24.37	25.00	1.156	0.202	22.1
Hotspot Test data with cover opened (Separate 10mm 50%RB)											
Front side	10	QPSK 25RB_0	23230/782	1:1	0.251	-0.15	23.35	24.00	1.161	0.292	22.1
Back side	10	QPSK 25RB_0	23230/782	1:1	0.549	0.08	23.35	24.00	1.161	0.638	22.1
Left side	10	QPSK 25RB_0	23230/782	1:1	0.207	0.02	23.35	24.00	1.161	0.240	22.1
Right side	10	QPSK 25RB_0	23230/782	1:1	0.438	-0.06	23.35	24.00	1.161	0.509	22.1



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Bottom side	10	QPSK 25RB_0	23230/782	1:1	0.165	-0.01	23.35	24.00	1.161	0.192	22.1
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Table 30: SAR of LTE Band 13 for Head and Body.

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
- 2) Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz .
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.

Test Position	Channel/ Frequency (MHz)	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
			SAR (1g)		SAR (1g)	SAR (1g)
Back side	23230/782	0.858	0.851	1.008	N/A	N/A

Note: 1) When the original highest measured SAR is $\geq 0.80\text{ W/kg}$, 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 $\geq 1.45\text{ W/kg}$ ($\sim 10\%$ from the 1-g SAR limit).

3) A third repeated measurement was performed only if the original, first or second repeated measurement was $\geq 1.5\text{ W/kg}$ 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 $< 0.80\text{ W/kg}$

Table 31: SAR Measurement Variability Results.



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8.3.14 SAR Result of LTE Band 25

Test position	BW	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_0	26365/1882.5	1:1	0.478	0.08	23.34	24.00	1.164	0.556	22.3
Left tilted	20	QPSK 1RB_0	26365/1882.5	1:1	0.131	0.10	23.34	24.00	1.164	0.153	22.3
Right cheek	20	QPSK 1RB_0	26365/1882.5	1:1	0.432	-0.13	23.34	24.00	1.164	0.503	22.3
Right tilted	20	QPSK 1RB_0	26365/1882.5	1:1	0.103	-0.16	23.34	24.00	1.164	0.120	22.3
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_0	26365/1882.5	1:1	0.411	0.15	22.20	23.00	1.202	0.494	22.3
Left tilted	20	QPSK 50RB_0	26365/1882.5	1:1	0.111	0.04	22.20	23.00	1.202	0.133	22.3
Right cheek	20	QPSK 50RB_0	26365/1882.5	1:1	0.391	-0.19	22.20	23.00	1.202	0.470	22.3
Right tilted	20	QPSK 50RB_0	26365/1882.5	1:1	0.089	-0.08	22.20	23.00	1.202	0.107	22.3
Body worn Test data with cover closed with sensor on (Separate 15mm 1RB)											
Front side	20	QPSK 1RB_0	26365/1882.5	1:1	0.201	0.17	21.64	22.50	1.219	0.245	22.3
Back side	20	QPSK 1RB_0	26365/1882.5	1:1	0.547	0.18	21.64	22.50	1.219	0.667	22.3
Body worn Test data with cover closed with sensor on (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_0	26365/1882.5	1:1	0.170	-0.07	20.48	21.50	1.265	0.215	22.3
Back side	20	QPSK 50RB_0	26365/1882.5	1:1	0.455	-0.04	20.48	21.50	1.265	0.575	22.3
Body worn Test data with cover closed with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	26365/1882.5	1:1	0.221	-0.08	23.34	24.00	1.164	0.257	22.3
Back side	20	QPSK 1RB_0	26365/1882.5	1:1	0.602	-0.12	23.34	24.00	1.164	0.701	22.3
Body worn Test data with cover closed with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_0	26365/1882.5	1:1	0.186	-0.07	22.20	23.00	1.202	0.224	22.3
Back side	20	QPSK 50RB_0	26365/1882.5	1:1	0.484	0.06	22.20	23.00	1.202	0.582	22.3
Hotspot Test data with cover closed with sensor on (Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	26365/1882.5	1:1	0.293	-0.06	21.64	22.50	1.219	0.357	22.3
Back side	20	QPSK 1RB_0	26365/1882.5	1:1	0.907	-0.06	21.64	22.50	1.219	1.106	22.3
Left side	20	QPSK 1RB_0	26365/1882.5	1:1	0.358	0.00	21.64	22.50	1.219	0.436	22.3
Right side	20	QPSK 1RB_0	26365/1882.5	1:1	0.136	-0.18	21.64	22.50	1.219	0.166	22.3
Bottom side	20	QPSK 1RB_0	26365/1882.5	1:1	0.284	-0.06	21.64	22.50	1.219	0.346	22.3
Back side	20	QPSK 1RB_0	26140/1860	1:1	0.991	0.18	21.57	22.50	1.239	1.228	22.3
Back side	20	QPSK 1RB_0	26590/1905	1:1	0.829	0.07	21.60	22.50	1.230	1.020	22.3
Back side-repeated	20	QPSK 1RB_0	26140/1860	1:1	0.925	-0.03	21.57	22.50	1.239	1.146	22.3
Hotspot Test data with cover closed with sensor on (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	26365/1882.5	1:1	0.237	0.00	20.48	21.50	1.265	0.300	22.3
Back side	20	QPSK 50RB_0	26365/1882.5	1:1	0.740	-0.05	20.48	21.50	1.265	0.936	22.3
Left side	20	QPSK 50RB_0	26365/1882.5	1:1	0.284	0.17	20.48	21.50	1.265	0.359	22.3
Right side	20	QPSK 50RB_0	26365/1882.5	1:1	0.110	-0.09	20.48	21.50	1.265	0.139	22.3
Bottom side	20	QPSK 50RB_0	26365/1882.5	1:1	0.212	-0.07	20.48	21.50	1.265	0.268	22.3
Back side	20	QPSK 50RB_50	26140/1860	1:1	0.779	0.17	20.47	21.50	1.268	0.988	22.3
Back side	20	QPSK 50RB_50	26590/1905	1:1	0.633	0.12	20.46	21.50	1.271	0.804	22.3
Hotspot Test data with cover closed with sensor on (Separate 10mm 100%RB)											
Back side	20	QPSK 100RB_0	26140/1860	1:1	0.715	-0.14	20.47	21.50	1.268	0.906	22.3
Hotspot Test data with cover closed with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	26365/1882.5	1:1	0.221	-0.08	23.34	24.00	1.164	0.257	22.3
Back side	20	QPSK 1RB_0	26365/1882.5	1:1	0.602	-0.12	23.34	24.00	1.164	0.701	22.3
Left side	20	QPSK 1RB_0	26365/1882.5	1:1	0.204	-0.12	23.34	24.00	1.164	0.237	22.3
Right side	20	QPSK 1RB_0	26365/1882.5	1:1	0.097	-0.13	23.34	24.00	1.164	0.113	22.3
Bottom side	20	QPSK 1RB_0	26365/1882.5	1:1	0.180	0.12	23.34	24.00	1.164	0.210	22.3
Hotspot Test data with cover closed with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_0	26365/1882.5	1:1	0.186	-0.07	22.20	23.00	1.202	0.224	22.3
Back side	20	QPSK 50RB_0	26365/1882.5	1:1	0.484	0.06	22.20	23.00	1.202	0.582	22.3



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Left side	20	QPSK 50RB_0	26365/1882.5	1:1	0.178	-0.08	22.20	23.00	1.202	0.214	22.3
Right side	20	QPSK 50RB_0	26365/1882.5	1:1	0.090	0.19	22.20	23.00	1.202	0.108	22.3
Bottom side	20	QPSK 50RB_0	26365/1882.5	1:1	0.161	-0.16	22.20	23.00	1.202	0.194	22.3
Body worn Test data with cover opened with sensor on (Separate 15mm 1RB)											
Front side	20	QPSK 1RB_0	26365/1882.5	1:1	0.409	0.05	21.64	22.50	1.219	0.499	22.3
Back side	20	QPSK 1RB_0	26365/1882.5	1:1	0.556	-0.05	21.64	22.50	1.219	0.678	22.3
Body worn Test data with cover opened with sensor on (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_0	26365/1882.5	1:1	0.314	-0.19	20.48	21.50	1.265	0.397	22.3
Back side	20	QPSK 50RB_0	26365/1882.5	1:1	0.440	0.13	20.48	21.50	1.265	0.556	22.3
Body worn Test data with cover opened with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	26365/1882.5	1:1	0.322	-0.17	23.34	24.00	1.164	0.375	22.3
Back side	20	QPSK 1RB_0	26365/1882.5	1:1	0.444	0.08	23.34	24.00	1.164	0.517	22.3
Body worn Test data with cover opened with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_0	26365/1882.5	1:1	0.283	0.14	22.20	23.00	1.202	0.340	22.3
Back side	20	QPSK 50RB_0	26365/1882.5	1:1	0.379	-0.15	22.20	23.00	1.202	0.456	22.3
Hotspot Test data with cover opened with sensor on (Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	26365/1882.5	1:1	0.637	0.15	21.64	22.50	1.219	0.776	22.3
Back side	20	QPSK 1RB_0	26365/1882.5	1:1	0.979	0.05	21.64	22.50	1.219	1.193	22.3
Left side	20	QPSK 1RB_0	26365/1882.5	1:1	0.478	0.12	21.64	22.50	1.219	0.583	22.3
Right side	20	QPSK 1RB_0	26365/1882.5	1:1	0.120	-0.05	21.64	22.50	1.219	0.146	22.3
Bottom side	20	QPSK 1RB_0	26365/1882.5	1:1	0.294	0.08	21.64	22.50	1.219	0.358	22.3
Back side	20	QPSK 1RB_0	26140/1860	1:1	0.949	0.00	21.57	22.50	1.239	1.176	22.3
Back side	20	QPSK 1RB_0	26590/1905	1:1	0.870	0.11	21.60	22.50	1.230	1.070	22.3
Hotspot Test data with cover opened with sensor on (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	26365/1882.5	1:1	0.537	-0.08	20.48	21.50	1.265	0.679	22.3
Back side	20	QPSK 50RB_0	26365/1882.5	1:1	0.724	-0.05	20.48	21.50	1.265	0.916	22.3
Left side	20	QPSK 50RB_0	26365/1882.5	1:1	0.401	0.16	20.48	21.50	1.265	0.507	22.3
Right side	20	QPSK 50RB_0	26365/1882.5	1:1	0.099	0.03	20.48	21.50	1.265	0.125	22.3
Bottom side	20	QPSK 50RB_0	26365/1882.5	1:1	0.251	0.18	20.48	21.50	1.265	0.317	22.3
Back side	20	QPSK 50RB_50	26140/1860	1:1	0.781	0.06	20.47	21.50	1.268	0.990	22.3
Back side	20	QPSK 50RB_50	26590/1905	1:1	0.713	0.16	20.46	21.50	1.271	0.906	22.3
Hotspot Test data with cover opened with sensor on (Separate 10mm 100%RB)											
Back side	20	QPSK 100RB_0	26140/1860	1:1	0.720	-0.04	20.47	21.50	1.268	0.913	22.3
Hotspot Test data with cover opened with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	26365/1882.5	1:1	0.322	-0.17	23.34	24.00	1.164	0.375	22.3
Back side	20	QPSK 1RB_0	26365/1882.5	1:1	0.444	0.08	23.34	24.00	1.164	0.517	22.3
Left side	20	QPSK 1RB_0	26365/1882.5	1:1	0.320	-0.13	23.34	24.00	1.164	0.373	22.3
Right side	20	QPSK 1RB_0	26365/1882.5	1:1	0.107	0.02	23.34	24.00	1.164	0.125	22.3
Bottom side	20	QPSK 1RB_0	26365/1882.5	1:1	0.188	0.11	23.34	24.00	1.164	0.219	22.3
Hotspot Test data with cover opened with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_0	26365/1882.5	1:1	0.283	0.14	22.20	23.00	1.202	0.340	22.3
Back side	20	QPSK 50RB_0	26365/1882.5	1:1	0.379	-0.15	22.20	23.00	1.202	0.456	22.3
Left side	20	QPSK 50RB_0	26365/1882.5	1:1	0.261	0.04	22.20	23.00	1.202	0.314	22.3
Right side	20	QPSK 50RB_0	26365/1882.5	1:1	0.096	-0.18	22.20	23.00	1.202	0.115	22.3
Bottom side	20	QPSK 50RB_0	26365/1882.5	1:1	0.159	-0.08	22.20	23.00	1.202	0.191	22.3

Table 32: SAR of LTE Band 25 for Head and Body.

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
- 2) Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.



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- ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
- ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Back side	26140/1860	0.991	0.925	1.071	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 ($\sim 10\%$ 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 33: SAR Measurement Variability Results.



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8.3.15 SAR Result of LTE Band 26

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	15	QPSK 1RB_0	26865/831.5	1:1	0.332	0.12	24.35	25.00	1.161	0.386	22.1
Left tilted	15	QPSK 1RB_0	26865/831.5	1:1	0.136	-0.02	24.35	25.00	1.161	0.158	22.1
Right cheek	15	QPSK 1RB_0	26865/831.5	1:1	0.392	0.01	24.35	25.00	1.161	0.455	22.1
Right tilted	15	QPSK 1RB_0	26865/831.5	1:1	0.289	0.16	24.35	25.00	1.161	0.336	22.1
Head Test data(50%RB)											
Left cheek	15	QPSK 36RB_0	26865/831.5	1:1	0.249	0.06	23.34	24.00	1.164	0.290	22.1
Left tilted	15	QPSK 36RB_0	26865/831.5	1:1	0.196	-0.12	23.34	24.00	1.164	0.228	22.1
Right cheek	15	QPSK 36RB_0	26865/831.5	1:1	0.359	-0.01	23.34	24.00	1.164	0.418	22.1
Right tilted	15	QPSK 36RB_0	26865/831.5	1:1	0.245	-0.09	23.34	24.00	1.164	0.285	22.1
Body worn Test data with cover opened(Separate 15mm 1RB)											
Front side	15	QPSK 1RB_0	26865/831.5	1:1	0.183	-0.10	24.35	25.00	1.161	0.213	22.1
Back side	15	QPSK 1RB_0	26865/831.5	1:1	0.674	-0.13	24.35	25.00	1.161	0.783	22.1
Body worn Test data with cover opened (Separate 15mm 50%RB)											
Front side	15	QPSK 36RB_0	26865/831.5	1:1	0.194	0.13	23.34	24.00	1.164	0.226	22.1
Back side	15	QPSK 36RB_0	26865/831.5	1:1	0.604	-0.02	23.34	24.00	1.164	0.703	22.1
Hotspot Test data with cover opened(Separate 10mm 1RB)											
Front side	15	QPSK 1RB_0	26865/831.5	1:1	0.217	-0.16	24.35	25.00	1.161	0.252	22.1
Back side	15	QPSK 1RB_0	26865/831.5	1:1	0.725	0.06	24.35	25.00	1.161	0.842	22.1
Left side	15	QPSK 1RB_0	26865/831.5	1:1	0.381	0.13	24.35	25.00	1.161	0.443	22.1
Right side	15	QPSK 1RB_0	26865/831.5	1:1	0.266	0.15	24.35	25.00	1.161	0.309	22.1
Bottom side	15	QPSK 1RB_0	26865/831.5	1:1	0.104	-0.17	24.35	25.00	1.161	0.121	22.1
Back side	15	QPSK 1RB_0	26765/821.5	1:1	0.701	-0.01	24.32	25.00	1.169	0.820	22.1
Back side	15	QPSK 1RB_38	26965/841.5	1:1	0.658	0.11	24.19	25.00	1.205	0.793	22.1
Hotspot Test data with cover opened (Separate 10mm 50%RB)											
Front side	15	QPSK 36RB_0	26865/831.5	1:1	0.206	-0.06	23.34	24.00	1.164	0.240	22.1
Back side	15	QPSK 36RB_0	26865/831.5	1:1	0.716	-0.11	23.34	24.00	1.164	0.834	22.1
Left side	15	QPSK 36RB_0	26865/831.5	1:1	0.387	-0.02	23.34	24.00	1.164	0.451	22.1
Right side	15	QPSK 36RB_0	26865/831.5	1:1	0.279	-0.02	23.34	24.00	1.164	0.325	22.1
Bottom side	15	QPSK 36RB_0	26865/831.5	1:1	0.112	-0.11	23.34	24.00	1.164	0.130	22.1
Back side	15	QPSK 36RB_0	26765/821.5	1:1	0.703	-0.12	23.25	24.00	1.189	0.836	22.1
Back side	15	QPSK 36RB_0	26965/841.5	1:1	0.671	-0.12	23.31	24.00	1.172	0.787	22.1
Hotspot Test data with cover closed (Separate 10mm 100%RB)											
Back side	15	QPSK 75RB_0	26865/831.5	1:1	0.700	-0.11	23.25	24.00	1.189	0.832	22.1
Body worn Test data with cover opened(Separate 15mm 1RB)											
Front side	15	QPSK 1RB_0	26865/831.5	1:1	0.096	-0.12	24.35	25.00	1.161	0.111	22.1
Back side	15	QPSK 1RB_0	26865/831.5	1:1	0.141	-0.08	24.35	25.00	1.161	0.164	22.1
Body worn Test data with cover opened (Separate 15mm 50%RB)											
Front side	15	QPSK 36RB_0	26865/831.5	1:1	0.099	-0.08	24.35	24.00	0.923	0.091	22.1
Back side	15	QPSK 36RB_0	26865/831.5	1:1	0.143	-0.13	24.35	24.00	0.923	0.132	22.1
Hotspot Test data with cover opened(Separate 10mm 1RB)											
Front side	15	QPSK 1RB_0	26865/831.5	1:1	0.153	0.13	24.35	25.00	1.161	0.178	22.1
Back side	15	QPSK 1RB_0	26865/831.5	1:1	0.227	0.09	24.35	25.00	1.161	0.264	22.1
Left side	15	QPSK 1RB_0	26865/831.5	1:1	0.126	-0.13	24.35	25.00	1.161	0.146	22.1
Right side	15	QPSK 1RB_0	26865/831.5	1:1	0.244	-0.06	24.35	25.00	1.161	0.283	22.1
Bottom side	15	QPSK 1RB_0	26865/831.5	1:1	0.087	0.02	24.35	25.00	1.161	0.101	22.1
Hotspot Test data with cover opened (Separate 10mm 50%RB)											
Front side	15	QPSK 36RB_0	26865/831.5	1:1	0.169	0.18	23.34	24.00	1.164	0.197	22.1
Back side	15	QPSK 36RB_0	26865/831.5	1:1	0.252	0.07	23.34	24.00	1.164	0.293	22.1
Left side	15	QPSK 36RB_0	26865/831.5	1:1	0.117	-0.01	23.34	24.00	1.164	0.136	22.1



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Right side	15	QPSK 36RB_0	26865/831.5	1:1	0.218	-0.14	23.34	24.00	1.164	0.254	22.1
Bottom side	15	QPSK 36RB_0	26865/831.5	1:1	0.075	-0.12	23.34	24.00	1.164	0.087	22.1

Table 34: SAR of LTE Band 26 for Head and Body.

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
- 2) Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.



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8.3.16 SAR Result of LTE Band 41

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_0	40620/2593	1:1.58	0.186	0.01	23.56	24.00	1.107	0.206	22.1
Left cheek-HPUE	20	QPSK 1RB_0	40620/2593	1:1.58	0.141	-0.17	26.07	26.50	1.104	0.156	22.1
Left tilted	20	QPSK 1RB_0	40620/2593	1:1.58	0.060	0.06	23.56	24.00	1.107	0.066	22.1
Right cheek	20	QPSK 1RB_0	40620/2593	1:1.58	0.087	0.01	23.56	24.00	1.107	0.096	22.1
Right tilted	20	QPSK 1RB_0	40620/2593	1:1.58	0.026	-0.08	23.56	24.00	1.107	0.029	22.1
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_0	40620/2593	1:1.58	0.171	0.19	22.77	23.00	1.054	0.180	22.1
Left tilted	20	QPSK 50RB_0	40620/2593	1:1.58	0.051	0.11	22.77	23.00	1.054	0.054	22.1
Right cheek	20	QPSK 50RB_0	40620/2593	1:1.58	0.078	-0.15	22.77	23.00	1.054	0.082	22.1
Right tilted	20	QPSK 50RB_0	40620/2593	1:1.58	0.017	-0.08	22.77	23.00	1.054	0.018	22.1
Body worn Test data with cover closed with sensor on (Separate 15mm 1RB)											
Front side	20	QPSK 1RB_0	40620/2593	1:1.58	0.070	0.01	18.04	19.00	1.247	0.087	22.1
Back side	20	QPSK 1RB_0	40620/2593	1:1.58	0.335	0.03	18.04	19.00	1.247	0.418	22.1
Back side-HPUE	20	QPSK 1RB_0	40620/2593	1:1.58	0.311	0.07	21.18	21.50	1.076	0.335	22.1
Body worn Test data with cover closed with sensor on (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_0	40620/2593	1:1.58	0.053	-0.07	17.08	18.00	1.236	0.066	22.1
Back side	20	QPSK 50RB_0	40620/2593	1:1.58	0.182	0.01	17.08	18.00	1.236	0.225	22.1
Body worn Test data with cover closed with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	40620/2593	1:1.58	0.110	-0.13	23.56	24.00	1.107	0.122	22.1
Back side	20	QPSK 1RB_0	40620/2593	1:1.58	0.274	0.01	23.56	24.00	1.107	0.303	22.1
Body worn Test data with cover closed with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_0	40620/2593	1:1.58	0.093	0.14	22.77	23.00	1.054	0.098	22.1
Back side	20	QPSK 50RB_0	40620/2593	1:1.58	0.253	0.02	22.77	23.00	1.054	0.267	22.1
Hotspot Test data with cover closed with sensor on (Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	40620/2593	1:1.58	0.102	-0.07	18.04	19.00	1.247	0.127	22.1
Back side	20	QPSK 1RB_0	40620/2593	1:1.58	0.476	0.04	18.04	19.00	1.247	0.594	22.1
Left side	20	QPSK 1RB_0	40620/2593	1:1.58	0.187	-0.16	18.04	19.00	1.247	0.233	22.1
Right side	20	QPSK 1RB_0	40620/2593	1:1.58	0.041	0.00	18.04	19.00	1.247	0.051	22.1
Bottom side	20	QPSK 1RB_0	40620/2593	1:1.58	0.618	0.09	18.04	19.00	1.247	0.771	22.1
Bottom side	20	QPSK 1RB_0	39750/2506	1:1.58	0.654	0.16	17.71	1.00	0.021	0.014	22.1
Bottom side	20	QPSK 1RB_0	40185/2549.5	1:1.58	1.020	0.05	17.91	19.00	1.285	1.311	22.1
Bottom side-repeated	20	QPSK 1RB_0	40185/2549.5	1:1.58	0.999	0.08	21.10	21.50	1.096	1.095	22.1
Bottom side-HPUE	20	QPSK 1RB_0	40185/2549.5	1:1.58	0.992	0.03	21.10	21.50	1.096	1.088	22.1
Bottom side	20	QPSK 1RB_0	41055/2636.5	1:1.58	0.374	0.03	17.94	19.00	1.276	0.477	22.1
Bottom side	20	QPSK 1RB_0	41490/2680	1:1.58	0.258	0.18	17.66	19.00	1.361	0.351	22.1
Hotspot Test data with cover closed with sensor on (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	40620/2593	1:1.58	0.081	-0.02	17.08	18.00	1.236	0.100	22.1
Back side	20	QPSK 50RB_0	40620/2593	1:1.58	0.397	-0.17	17.08	18.00	1.236	0.491	22.1
Left side	20	QPSK 50RB_0	40620/2593	1:1.58	0.152	0.16	17.08	18.00	1.236	0.188	22.1
Right side	20	QPSK 50RB_0	40620/2593	1:1.58	0.039	-0.10	17.08	18.00	1.236	0.048	22.1
Bottom side	20	QPSK 50RB_0	40620/2593	1:1.58	0.471	0.11	17.08	18.00	1.236	0.582	22.1
Hotspot Test data with cover closed with sensor on (Separate 10mm 100%RB)											
Bottom side	20	QPSK 100RB_0	40620/2593	1:1.58	0.439	-0.15	17.02	19.00	1.578	0.693	22.1
Hotspot Test data with cover closed with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	40620/2593	1:1.58	0.110	-0.13	23.56	24.00	1.107	0.122	22.1
Back side	20	QPSK 1RB_0	40620/2593	1:1.58	0.274	0.01	23.56	24.00	1.107	0.303	22.1
Left side	20	QPSK 1RB_0	40620/2593	1:1.58	0.165	-0.02	23.56	24.00	1.107	0.183	22.1
Right side	20	QPSK 1RB_0	40620/2593	1:1.58	0.050	0.11	23.56	24.00	1.107	0.055	22.1



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Bottom side	20	QPSK 1RB_0	40620/2593	1:1.58	0.327	0.01	23.56	24.00	1.107	0.362	22.1
Hotspot Test data with cover closed with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_0	40620/2593	1:1.58	0.093	0.14	22.77	23.00	1.054	0.098	22.1
Back side	20	QPSK 50RB_0	40620/2593	1:1.58	0.253	0.02	22.77	23.00	1.054	0.267	22.1
Left side	20	QPSK 50RB_0	40620/2593	1:1.58	0.138	0.03	22.77	23.00	1.054	0.146	22.1
Right side	20	QPSK 50RB_0	40620/2593	1:1.58	0.064	0.10	22.77	23.00	1.054	0.067	22.1
Bottom side	20	QPSK 50RB_0	40620/2593	1:1.58	0.268	0.05	22.77	23.00	1.054	0.283	22.1
Body worn Test data with cover opened with sensor on (Separate 15mm 1RB)											
Front side	20	QPSK 1RB_0	40620/2593	1:1.58	0.189	0.04	18.04	19.00	1.247	0.236	22.1
Back side	20	QPSK 1RB_0	40620/2593	1:1.58	0.258	-0.16	18.04	19.00	1.247	0.322	22.1
Body worn Test data with cover opened with sensor on (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_0	40620/2593	1:1.58	0.147	-0.08	17.08	18.00	1.236	0.182	22.1
Back side	20	QPSK 50RB_0	40620/2593	1:1.58	0.199	-0.12	17.08	18.00	1.236	0.246	22.1
Body worn Test data with cover opened with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	40620/2593	1:1.58	0.277	-0.06	23.56	24.00	1.107	0.307	22.1
Back side	20	QPSK 1RB_0	40620/2593	1:1.58	0.318	-0.03	23.56	24.00	1.107	0.352	22.1
Body worn Test data with cover opened with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_0	40620/2593	1:1.58	0.233	-0.06	22.77	23.00	1.054	0.246	22.1
Back side	20	QPSK 50RB_0	40620/2593	1:1.58	0.256	0.17	22.77	23.00	1.054	0.270	22.1
Hotspot Test data with cover opened with sensor on (Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	40620/2593	1:1.58	0.355	0.08	18.04	19.00	1.247	0.443	22.1
Back side	20	QPSK 1RB_0	40620/2593	1:1.58	0.510	0.15	18.04	19.00	1.247	0.636	22.1
Left side	20	QPSK 1RB_0	40620/2593	1:1.58	0.243	0.11	18.04	19.00	1.247	0.303	22.1
Right side	20	QPSK 1RB_0	40620/2593	1:1.58	0.056	-0.15	18.04	19.00	1.247	0.070	22.1
Bottom side	20	QPSK 1RB_0	40620/2593	1:1.58	0.707	0.18	18.04	19.00	1.247	0.882	22.1
Back side	20	QPSK 1RB_0	39750/2506	1:1.58	0.386	0.03	17.71	19.00	1.346	0.520	22.1
Back side	20	QPSK 1RB_0	40185/2549.5	1:1.58	0.547	0.17	17.91	19.00	1.285	0.703	22.1
Back side	20	QPSK 1RB_0	41055/2636.5	1:1.58	0.418	-0.12	17.94	19.00	1.276	0.534	22.1
Back side	20	QPSK 1RB_0	41490/2680	1:1.58	0.290	0.01	17.66	19.00	1.361	0.395	22.1
Bottom side	20	QPSK 1RB_0	39750/2506	1:1.58	0.628	0.12	17.71	19.00	1.346	0.845	22.1
Bottom side	20	QPSK 1RB_0	40185/2549.5	1:1.58	0.924	-0.17	17.91	19.00	1.285	1.188	22.1
Bottom side	20	QPSK 1RB_0	41055/2636.5	1:1.58	0.541	0.19	17.94	19.00	1.276	0.691	22.1
Bottom side	20	QPSK 1RB_0	41490/2680	1:1.58	0.321	-0.16	17.66	19.00	1.361	0.437	22.1
Hotspot Test data with cover opened with sensor on (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	40620/2593	1:1.58	0.299	0.00	17.08	18.00	1.236	0.370	22.1
Back side	20	QPSK 50RB_0	40620/2593	1:1.58	0.448	0.18	17.08	18.00	1.236	0.554	22.1
Left side	20	QPSK 50RB_0	40620/2593	1:1.58	0.196	0.10	17.08	18.00	1.236	0.242	22.1
Right side	20	QPSK 50RB_0	40620/2593	1:1.58	0.032	-0.17	17.08	18.00	1.236	0.040	22.1
Bottom side	20	QPSK 50RB_0	40620/2593	1:1.58	0.575	-0.08	17.08	18.00	1.236	0.711	22.1
Bottom side	20	QPSK 50RB_0	39750/2506	1:1.58	0.515	-0.16	16.84	18.00	1.306	0.673	22.1
Bottom side	20	QPSK 50RB_0	40185/2549.5	1:1.58	0.641	0.13	17.04	18.00	1.247	0.800	22.1
Bottom side	20	QPSK 50RB_0	41055/2636.5	1:1.58	0.343	0.00	17.00	18.00	1.259	0.432	22.1
Bottom side	20	QPSK 50RB_0	41490/2680	1:1.58	0.234	-0.14	16.77	18.00	1.327	0.311	22.1
Hotspot Test data with cover opened with sensor on (Separate 10mm 100%RB)											
Back side	20	QPSK 100RB_0	40620/2593	1:1.58	0.429	0.08	17.02	18.00	1.253	0.538	22.1
Bottom side	20	QPSK 100RB_0	40620/2593	1:1.58	0.571	-0.04	17.02	18.00	1.253	0.716	22.1
Hotspot Test data with cover opened with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	40620/2593	1:1.58	0.277	-0.06	23.56	24.00	1.107	0.307	22.1
Back side	20	QPSK 1RB_0	40620/2593	1:1.58	0.318	-0.03	23.56	24.00	1.107	0.352	22.1
Left side	20	QPSK 1RB_0	40620/2593	1:1.58	0.176	-0.04	23.56	24.00	1.107	0.195	22.1
Right side	20	QPSK 1RB_0	40620/2593	1:1.58	0.054	0.07	23.56	24.00	1.107	0.060	22.1
Bottom side	20	QPSK 1RB_0	40620/2593	1:1.58	0.436	-0.16	23.56	24.00	1.107	0.482	22.1
Hotspot Test data with cover opened with sensor off (Separate 19mm 50%RB)											



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Front side	20	QPSK 50RB_0	40620/2593	1:1.58	0.233	-0.06	22.77	23.00	1.054	0.246	22.1
Back side	20	QPSK 50RB_0	40620/2593	1:1.58	0.256	0.17	22.77	23.00	1.054	0.270	22.1
Left side	20	QPSK 50RB_0	40620/2593	1:1.58	0.161	0.03	22.77	23.00	1.054	0.170	22.1
Right side	20	QPSK 50RB_0	40620/2593	1:1.58	0.046	0.07	22.77	23.00	1.054	0.049	22.1
Bottom side	20	QPSK 50RB_0	40620/2593	1:1.58	0.343	0.01	22.77	23.00	1.054	0.362	22.1

Table 35: 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 KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Bottom side	40185/2549.5	1.020	0.999	1.021	N/A	N/A

Note: 1) When the original highest measured SAR is $\geq 0.80\text{ W/kg}$, 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 $\geq 1.45\text{ W/kg}$ ($\sim 10\%$ from the 1-g SAR limit).

3) A third repeated measurement was performed only if the original, first or second repeated measurement was $\geq 1.5\text{ W/kg}$ 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 $< 0.80\text{ W/kg}$

Table 36: SAR Measurement Variability Results.



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8.3.17 SAR Result of LTE Band 66

Test position	BW	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_0	132322/1745	1:1	0.142	0.08	24.44	25.00	1.138	0.162	22.2
Left tilted	20	QPSK 1RB_0	132322/1745	1:1	0.027	-0.13	24.44	25.00	1.138	0.031	22.2
Right cheek	20	QPSK 1RB_0	132322/1745	1:1	0.198	0.13	24.44	25.00	1.138	0.225	22.2
Right tilted	20	QPSK 1RB_0	132322/1745	1:1	0.017	0.00	24.44	25.00	1.138	0.019	22.2
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_25	132322/1745	1:1	0.127	0.06	23.54	24.00	1.112	0.141	22.2
Left tilted	20	QPSK 50RB_25	132322/1745	1:1	0.024	-0.01	23.54	24.00	1.112	0.027	22.2
Right cheek	20	QPSK 50RB_25	132322/1745	1:1	0.188	-0.13	23.54	24.00	1.112	0.209	22.2
Right tilted	20	QPSK 50RB_25	132322/1745	1:1	0.015	0.16	23.54	24.00	1.112	0.017	22.2
Body worn Test data with cover closed with sensor on (Separate 15mm 1RB)											
Front side	20	QPSK 1RB_0	132322/1745	1:1	0.180	-0.10	21.69	22.00	1.074	0.193	22.2
Back side	20	QPSK 1RB_0	132322/1745	1:1	0.481	0.15	21.69	22.00	1.074	0.517	22.2
Body worn Test data with cover closed with sensor on (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_25	132322/1745	1:1	0.153	-0.09	20.53	21.00	1.114	0.170	22.2
Back side	20	QPSK 50RB_25	132322/1745	1:1	0.450	-0.13	20.53	21.00	1.114	0.501	22.2
Body worn Test data with cover closed with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	132322/1745	1:1	0.203	0.01	24.44	25.00	1.138	0.231	22.2
Back side	20	QPSK 1RB_0	132322/1745	1:1	0.658	0.15	24.44	25.00	1.138	0.749	22.2
Body worn Test data with cover closed with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_25	132322/1745	1:1	0.193	0.06	23.54	24.00	1.112	0.215	22.2
Back side	20	QPSK 50RB_25	132322/1745	1:1	0.527	0.15	23.54	24.00	1.112	0.586	22.2
Hotspot Test data with cover closed with sensor on (Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	132322/1745	1:1	0.309	-0.03	21.69	22.00	1.074	0.332	22.2
Back side	20	QPSK 1RB_0	132322/1745	1:1	0.918	-0.06	21.69	22.00	1.074	0.986	22.2
Left side	20	QPSK 1RB_0	132322/1745	1:1	0.274	0.02	21.69	22.00	1.074	0.294	22.2
Right side	20	QPSK 1RB_0	132322/1745	1:1	0.083	-0.18	21.69	22.00	1.074	0.089	22.2
Bottom side	20	QPSK 1RB_0	132322/1745	1:1	0.401	0.06	21.69	22.00	1.074	0.431	22.2
Back side	20	QPSK 1RB_0	132072/1720	1:1	0.683	-0.12	21.59	22.00	1.099	0.751	22.2
Back side	20	QPSK 1RB_0	132572/1770	1:1	1.010	0.19	21.66	22.00	1.081	1.092	22.2
Back side-repeated	20	QPSK 1RB_0	132322/1745	1:1	0.910	-0.16	21.69	22.00	1.074	0.977	22.2
Hotspot Test data with cover closed with sensor on (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_25	132322/1745	1:1	0.255	-0.06	20.53	21.00	1.114	0.284	22.2
Back side	20	QPSK 50RB_25	132322/1745	1:1	0.771	-0.12	20.53	21.00	1.114	0.859	22.2
Left side	20	QPSK 50RB_25	132322/1745	1:1	0.239	0.03	20.53	21.00	1.114	0.266	22.2
Right side	20	QPSK 50RB_25	132322/1745	1:1	0.065	0.14	20.53	21.00	1.114	0.072	22.2
Bottom side	20	QPSK 50RB_25	132322/1745	1:1	0.311	0.03	20.53	21.00	1.114	0.347	22.2
Back side	20	QPSK 50RB_50	132072/1720	1:1	0.615	-0.10	20.24	21.00	1.191	0.733	22.2
Back side	20	QPSK 50RB_50	132572/1770	1:1	0.841	0.08	20.37	21.00	1.156	0.972	22.2
Hotspot Test data with cover closed with sensor on (Separate 10mm 100%RB)											
Back side	20	QPSK 100RB_0	132322/1745	1:1	0.828	0.16	20.55	21.00	1.109	0.918	22.2
Hotspot Test data with cover closed with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	132322/1745	1:1	0.203	0.01	24.44	25.00	1.138	0.231	22.2
Back side	20	QPSK 1RB_0	132322/1745	1:1	0.658	0.15	24.44	25.00	1.138	0.749	22.2
Left side	20	QPSK 1RB_0	132322/1745	1:1	0.169	0.07	24.44	25.00	1.138	0.192	22.2
Right side	20	QPSK 1RB_0	132322/1745	1:1	0.071	0.01	24.44	25.00	1.138	0.081	22.2
Bottom side	20	QPSK 1RB_0	132322/1745	1:1	0.240	-0.12	24.44	25.00	1.138	0.273	22.2
Hotspot Test data with cover closed with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_25	132322/1745	1:1	0.193	0.06	23.54	24.00	1.112	0.215	22.2
Back side	20	QPSK 50RB_25	132322/1745	1:1	0.527	0.15	23.54	24.00	1.112	0.586	22.2



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Left side	20	QPSK 50RB_25	132322/1745	1:1	0.161	0.16	23.54	24.00	1.112	0.179	22.2
Right side	20	QPSK 50RB_25	132322/1745	1:1	0.069	-0.10	23.54	24.00	1.112	0.077	22.2
Bottom side	20	QPSK 50RB_25	132322/1745	1:1	0.232	-0.19	23.54	24.00	1.112	0.258	22.2
Body worn Test data with cover opened with sensor on (Separate 15mm 1RB)											
Front side	20	QPSK 1RB_0	132322/1745	1:1	0.343	-0.06	21.69	22.00	1.074	0.368	22.2
Back side	20	QPSK 1RB_0	132322/1745	1:1	0.445	-0.18	21.69	22.00	1.074	0.478	22.2
Body worn Test data with cover opened with sensor on (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_25	132322/1745	1:1	0.302	-0.12	20.53	21.00	1.114	0.337	22.2
Back side	20	QPSK 50RB_25	132322/1745	1:1	0.398	-0.07	20.53	21.00	1.114	0.443	22.2
Body worn Test data with cover opened with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	132322/1745	1:1	0.487	-0.02	24.44	25.00	1.138	0.554	22.2
Back side	20	QPSK 1RB_0	132322/1745	1:1	0.605	0.08	24.44	25.00	1.138	0.688	22.2
Body worn Test data with cover opened with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_25	132322/1745	1:1	0.431	0.12	23.54	24.00	1.112	0.479	22.2
Back side	20	QPSK 50RB_25	132322/1745	1:1	0.571	0.14	23.54	24.00	1.112	0.635	22.2
Hotspot Test data with cover opened with sensor on (Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	132322/1745	1:1	0.601	-0.09	21.69	22.00	1.074	0.645	22.2
Back side	20	QPSK 1RB_0	132322/1745	1:1	0.811	-0.08	21.69	22.00	1.074	0.871	22.2
Left side	20	QPSK 1RB_0	132322/1745	1:1	0.264	0.03	21.69	22.00	1.074	0.284	22.2
Right side	20	QPSK 1RB_0	132322/1745	1:1	0.065	0.15	21.69	22.00	1.074	0.070	22.2
Bottom side	20	QPSK 1RB_0	132322/1745	1:1	0.386	0.14	21.69	22.00	1.074	0.415	22.2
Back side	20	QPSK 1RB_0	132072/1720	1:1	0.523	-0.03	21.59	22.00	1.099	0.575	22.2
Back side	20	QPSK 1RB_0	132572/1770	1:1	0.895	0.17	21.66	22.00	1.081	0.968	22.2
Hotspot Test data with cover opened with sensor on (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_25	132322/1745	1:1	0.524	-0.02	20.53	21.00	1.114	0.584	22.2
Back side	20	QPSK 50RB_25	132322/1745	1:1	0.722	-0.18	20.53	21.00	1.114	0.805	22.2
Left side	20	QPSK 50RB_25	132322/1745	1:1	0.233	-0.03	20.53	21.00	1.114	0.260	22.2
Right side	20	QPSK 50RB_25	132322/1745	1:1	0.055	0.17	20.53	21.00	1.114	0.061	22.2
Bottom side	20	QPSK 50RB_25	132322/1745	1:1	0.303	-0.15	20.53	21.00	1.114	0.338	22.2
Back side	20	QPSK 50RB_50	132072/1720	1:1	0.456	-0.08	20.24	21.00	1.191	0.543	22.2
Back side	20	QPSK 50RB_50	132572/1770	1:1	0.778	0.10	20.37	21.00	1.156	0.899	22.2
Hotspot Test data with cover opened with sensor on (Separate 10mm 100%RB)											
Back side	20	QPSK 100RB_0	132322/1745	1:1	0.691	-0.03	20.55	21.00	1.109	0.766	22.2
Hotspot Test data with cover opened with sensor off (Separate 19mm 1RB)											
Front side	20	QPSK 1RB_0	132322/1745	1:1	0.487	-0.02	24.44	25.00	1.138	0.554	22.2
Back side	20	QPSK 1RB_0	132322/1745	1:1	0.605	0.08	24.44	25.00	1.138	0.688	22.2
Left side	20	QPSK 1RB_0	132322/1745	1:1	0.209	0.09	24.44	25.00	1.138	0.238	22.2
Right side	20	QPSK 1RB_0	132322/1745	1:1	0.055	-0.04	24.44	25.00	1.138	0.063	22.2
Bottom side	20	QPSK 1RB_0	132322/1745	1:1	0.296	0.00	24.44	25.00	1.138	0.337	22.2
Hotspot Test data with cover opened with sensor off (Separate 19mm 50%RB)											
Front side	20	QPSK 50RB_25	132322/1745	1:1	0.431	0.12	23.54	24.00	1.112	0.479	22.2
Back side	20	QPSK 50RB_25	132322/1745	1:1	0.571	0.14	23.54	24.00	1.112	0.635	22.2
Left side	20	QPSK 50RB_25	132322/1745	1:1	0.203	0.16	23.54	24.00	1.112	0.226	22.2
Right side	20	QPSK 50RB_25	132322/1745	1:1	0.050	-0.13	23.54	24.00	1.112	0.056	22.2
Bottom side	20	QPSK 50RB_25	132322/1745	1:1	0.279	-0.06	23.54	24.00	1.112	0.310	22.2

Table 37: SAR of LTE Band 66 for Head and Body.

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
- 2) Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.



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- ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
- ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Back Side	132572/1770	1.010	0.910	1.110	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 ($\sim 10\%$ 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 38: SAR Measurement Variability Results.



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8.3.18 SAR Result of LTE Band 71

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_0	133322/683	1:1	0.047	-0.15	24.34	25.00	1.164	0.055	22.1
Left tilted	20	QPSK 1RB_0	133322/683	1:1	0.009	-0.09	24.34	25.00	1.164	0.010	22.1
Right cheek	20	QPSK 1RB_0	133322/683	1:1	0.030	0.03	24.34	25.00	1.164	0.035	22.1
Right tilted	20	QPSK 1RB_0	133322/683	1:1	0.009	-0.07	24.34	25.00	1.164	0.010	22.1
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_25	133322/683	1:1	0.064	0.10	23.28	24.00	1.180	0.076	22.1
Left tilted	20	QPSK 50RB_25	133322/683	1:1	0.013	0.17	23.28	24.00	1.180	0.015	22.1
Right cheek	20	QPSK 50RB_25	133322/683	1:1	0.040	-0.13	23.28	24.00	1.180	0.047	22.1
Right tilted	20	QPSK 50RB_25	133322/683	1:1	0.012	0.07	23.28	24.00	1.180	0.014	22.1
Body worn Test data with cover closed(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_0	133322/683	1:1	0.007	-0.05	24.34	25.00	1.164	0.008	22.1
Back side	20	QPSK 1RB_0	133322/683	1:1	0.106	0.13	24.34	25.00	1.164	0.123	22.1
Body worn Test data with cover closed (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_25	133322/683	1:1	0.037	0.04	23.28	24.00	1.180	0.044	22.1
Back side	20	QPSK 50RB_25	133322/683	1:1	0.116	-0.02	23.28	24.00	1.180	0.137	22.1
Hotspot Test data with cover closed(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	133322/683	1:1	0.052	0.18	24.34	25.00	1.164	0.061	22.1
Back side	20	QPSK 1RB_0	133322/683	1:1	0.194	0.05	24.34	25.00	1.164	0.226	22.1
Left side	20	QPSK 1RB_0	133322/683	1:1	0.053	-0.04	24.34	25.00	1.164	0.062	22.1
Right side	20	QPSK 1RB_0	133322/683	1:1	0.057	-0.13	24.34	25.00	1.164	0.066	22.1
Bottom side	20	QPSK 1RB_0	133322/683	1:1	0.049	-0.09	24.34	25.00	1.164	0.057	22.1
Hotspot Test data with cover closed (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_25	133322/683	1:1	0.063	0.12	23.28	24.00	1.180	0.074	22.1
Back side	20	QPSK 50RB_25	133322/683	1:1	0.198	0.05	23.28	24.00	1.180	0.234	22.1
Left side	20	QPSK 50RB_25	133322/683	1:1	0.070	-0.18	23.28	24.00	1.180	0.083	22.1
Right side	20	QPSK 50RB_25	133322/683	1:1	0.066	-0.13	23.28	24.00	1.180	0.078	22.1
Bottom side	20	QPSK 50RB_25	133322/683	1:1	0.062	0.03	23.28	24.00	1.180	0.073	22.1
Body worn Test data with cover opened(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_0	133322/683	1:1	0.063	-0.02	24.34	25.00	1.164	0.073	22.1
Back side	20	QPSK 1RB_0	133322/683	1:1	0.109	0.03	24.34	25.00	1.164	0.127	22.1
Body worn Test data with cover opened (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_25	133322/683	1:1	0.061	0.16	23.28	24.00	1.180	0.072	22.1
Back side	20	QPSK 50RB_25	133322/683	1:1	0.113	-0.04	23.28	24.00	1.180	0.133	22.1
Hotspot Test data with cover opened(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	133322/683	1:1	0.093	0.11	24.34	25.00	1.164	0.108	22.1
Back side	20	QPSK 1RB_0	133322/683	1:1	0.157	0.03	24.34	25.00	1.164	0.183	22.1
Left side	20	QPSK 1RB_0	133322/683	1:1	0.044	-0.04	24.34	25.00	1.164	0.051	22.1
Right side	20	QPSK 1RB_0	133322/683	1:1	0.079	0.01	24.34	25.00	1.164	0.092	22.1
Bottom side	20	QPSK 1RB_0	133322/683	1:1	0.049	0.06	24.34	25.00	1.164	0.057	22.1
Hotspot Test data with cover opened (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_25	133322/683	1:1	0.094	0.01	23.28	24.00	1.180	0.111	22.1
Back side	20	QPSK 50RB_25	133322/683	1:1	0.172	-0.09	23.28	24.00	1.180	0.203	22.1
Left side	20	QPSK 50RB_25	133322/683	1:1	0.042	-0.06	23.28	24.00	1.180	0.050	22.1
Right side	20	QPSK 50RB_25	133322/683	1:1	0.082	-0.15	23.28	24.00	1.180	0.097	22.1
Bottom side	20	QPSK 50RB_25	133322/683	1:1	0.046	-0.08	23.28	24.00	1.180	0.054	22.1

Table 39: SAR of LTE Band 71 for Head and Body.

Note:

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



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- 2) Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
- $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.





8.3.19 SAR Result of WiFi 2.4G

Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg)1-g	Power drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data											
Left cheek	802.11b	6/2437	97.62%	1.024	0.101	-0.02	17.64	18.00	1.086	0.112	22.0
Left tilted	802.11b	6/2437	97.62%	1.024	0.053	-0.19	17.64	18.00	1.086	0.059	22.0
Right cheek	802.11b	6/2437	97.62%	1.024	0.191	-0.01	17.64	18.00	1.086	0.212	22.0
Right tilted	802.11b	6/2437	97.62%	1.024	0.054	-0.02	17.64	18.00	1.086	0.060	22.0
Body worn Test data with cover closed(Separate 15mm)											
Front side	802.11b	6/2437	97.62%	1.024	0.053	-0.13	17.64	18.00	1.086	0.059	22.0
Back side	802.11b	6/2437	97.62%	1.024	0.100	-0.10	17.64	18.00	1.086	0.111	22.0
Hotspot Test data with cover closed (Separate 10mm)											
Front side	802.11b	6/2437	97.62%	1.024	0.086	-0.09	17.64	18.00	1.086	0.096	22.0
Back side	802.11b	6/2437	97.62%	1.024	0.170	0.03	17.64	18.00	1.086	0.189	22.0
Right side	802.11b	6/2437	97.62%	1.024	0.067	0.12	17.64	18.00	1.086	0.075	22.0
Top side	802.11b	6/2437	97.62%	1.024	0.055	-0.14	17.64	18.00	1.086	0.061	22.0
Body worn Test data with cover opened(Separate 15mm)											
Front side	802.11b	6/2437	97.62%	1.024	0.051	0.08	17.64	18.00	1.086	0.057	22.0
Back side	802.11b	6/2437	97.62%	1.024	0.094	0.00	17.64	18.00	1.086	0.105	22.0
Hotspot Test data with cover opened (Separate 10mm)											
Front side	802.11b	6/2437	97.62%	1.024	0.102	0.17	17.64	18.00	1.086	0.113	22.0
Back side	802.11b	6/2437	97.62%	1.024	0.162	0.15	17.64	18.00	1.086	0.180	22.0
Right side	802.11b	6/2437	97.62%	1.024	0.073	0.03	17.64	18.00	1.086	0.081	22.0

Table 40: SAR of WiFi 2.4G for Head and Body.

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
- 2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).
- 3) When the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR test for the other 802.11 modes are not required.



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8.4 Multiple Transmitter Evaluation

8.4.1 Simultaneous SAR test evaluation

- Simultaneous Transmission Possibilities

NO.	Simultaneous Transmission Configuration	Head	Body worn	Hotspot
1	GSM(Voice) + WiFi	Yes	Yes	No
2	GSM(Voice) + BT	Yes	Yes	No
3	WCDMA(Voice) + WiFi	Yes	Yes	No
4	WCDMA(Voice) + BT	Yes	Yes	No
5	GPRS / EDGE(Data) + WiFi	No	No	Yes
6	GPRS / EDGE(Data) + BT	No	No	Yes
7	WCDMA(Data) + WiFi	No	No	Yes
8	WCDMA(Data) + BT	No	No	Yes
9	LTE(Data) + WiFi	Yes	Yes	Yes
10	LTE(Data) + BT	Yes	Yes	Yes
11	BT+WIFI (They share the same antenna and cannot transmit at the same time by design.)	No	No	No

Note:

- 1) The device does not support DTM function.



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8.4.2 Simultaneous Transmission SAR Summation Scenario

Test position		Main Antenna SARmax (W/kg)																	WiFi Antenna SARmax (W/kg)		Summed 1g SARmax (W/kg)	
		GSM 850	GSM 1900	WCDMA Band II	WCDMA Band IV	WCDMA Band V	CDMA BC0	CDMA BC1	CDMA BC10	LTE Band 2	LTE Band 4	LTE Band 5	LTE Band 12	LTE Band 13	LTE Band 25	LTE Band 26	LTE Band 41	LTE Band 66	LTE Band 71	WLAN 2.4G		BT
Head	Left cheek	0.322	0.142	0.860	0.154	0.673	0.298	0.812	0.478	0.586	0.158	0.396	0.458	0.634	0.556	0.386	0.206	0.162	0.076	0.112	0.334	1.194
	Left tilted	0.249	0.035	0.209	0.043	0.470	0.172	0.143	0.248	0.163	0.033	0.199	0.171	0.274	0.153	0.228	0.066	0.031	0.015	0.059	0.334	0.804
	Right cheek	0.326	0.112	0.768	0.178	0.789	0.614	0.541	0.542	0.528	0.229	0.402	0.442	0.718	0.503	0.455	0.096	0.225	0.047	0.212	0.334	1.123
	Right tilted	0.229	0.026	0.157	0.031	0.496	0.178	0.098	0.260	0.127	0.031	0.200	0.155	0.286	0.120	0.336	0.029	0.019	0.014	0.060	0.334	0.830
Body worn	Front side	0.135	0.155	0.653	0.707	0.198	0.164	0.626	0.068	0.468	0.423	0.247	0.300	0.317	0.499	0.226	0.307	0.554	0.073	0.059	0.111	0.818
	Back side	0.417	0.478	1.080	1.026	0.668	0.613	0.855	0.251	0.742	0.592	0.859	0.987	0.865	0.701	0.783	0.418	0.749	0.137	0.111	0.111	1.191
Hotspot	Front side	0.287	0.741	0.881	0.707	0.377	0.250	0.626	0.300	0.892	0.741	0.302	0.409	0.334	0.776	0.252	0.443	0.645	0.111	0.113	0.167	1.059
	Back side	0.673	1.180	1.272	1.026	0.894	0.967	0.855	0.389	1.310	1.385	1.099	1.186	0.992	1.228	0.842	0.703	1.092	0.234	0.189	0.167	1.574
	Left side	0.281	0.447	0.559	0.323	0.242	0.176	0.509	0.166	0.623	0.357	0.500	0.556	0.476	0.583	0.451	0.303	0.294	0.083	/	/	0.623
	Right side	0.377	0.137	0.224	0.104	0.431	0.523	0.192	0.362	0.165	0.114	0.351	0.492	0.616	0.166	0.325	0.070	0.089	0.097	0.081	0.167	0.783
	Top side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.061	0.167	0.167
	Bottom side	0.113	0.302	0.396	0.423	0.190	0.184	0.378	0.215	0.392	0.519	0.118	0.167	0.202	0.358	0.130	1.311	0.431	0.073	/	/	1.311



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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 3	1912	NCR	NCR
☒	DAE	SPEAG	DAE4	896	2020-06-11	2021-06-10
☒	E-Field Probe	SPEAG	EX3DV4	3793	2020-05-09	2021-05-08
☒	Validation Kits	SPEAG	D750V3	1160	2019-05-22	2022-05-21
☒	Validation Kits	SPEAG	D835V2	4d105	2019-12-17	2022-12-16
☒	Validation Kits	SPEAG	D1750V2	1149	2019-05-21	2022-05-20
☒	Validation Kits	SPEAG	D1900V2	5d028	2019-12-17	2022-12-16
☒	Validation Kits	SPEAG	D2450V2	733	2019-12-17	2022-12-16
☒	Validation Kits	SPEAG	D2600V2	1125	2019-05-20	2022-05-19
☒	Agilent Network Analyzer	Agilent	E5071C	MY46523591	2020-04-16	2021-04-15
☒	Dielectric Probe Kit	Agilent	85070E	US01440210	NCR	NCR
☒	Universal Radio Communication Tester	R&S	CMW500	111637	2020-04-16	2021-04-15
☒	Radio Communication Analyzer	Anritsu	MT8821C	6201502984	2020-06-11	2021-06-10
☒	RF Bi-Directional Coupler	Agilent	86205-60001	MY31400031	NCR	NCR
☒	Signal Generator	Agilent	N5171B	MY53050736	2020-04-15	2021-04-14
☒	Preamplifier	Mini-Circuits	ZHL-42W	15542	NCR	NCR
☒	Preamplifier	Compliance Directions Systems Inc.	AMP28-3W	073501433	NCR	NCR
☒	Power Meter	Agilent	E4416A	GB41292095	2020-04-15	2021-04-14
☒	Power Sensor	Agilent	8481H	MY41091234	2020-04-15	2021-04-14
☒	Power Sensor	R&S	NRP-Z92	100025	2020-04-16	2021-04-15
☒	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	MingGao	T809	NA	2020-04-21	2021-04-20



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	thermometer					
☒	Humidity and Temperature Indicator	KIMTOKA	KIMTOKA	NA	2020-04-21	2021-04-20

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

10 Calibration certificate

Please see the Appendix C

11 Photographs

Please see the Appendix D

Appendix A: Detailed System Check Results

Appendix B: Detailed Test Results

Appendix C: Calibration certificate

Appendix D: Photographs

Appendix E: Conducted RF Output Power Table

---END---





Appendix A

Detailed System Check Results

1. System Performance Check
System Performance Check 750 MHz Head
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

Test Laboratory: SGS-SAR Lab

System Performance Check 750 MHz Head

DUT: D750V3; Type: D750V3; Serial: 1160

Communication System: UID 0, CW (0); Frequency: 750 MHz; Duty Cycle: 1:1

Medium: HSL750; Medium parameters used: $f = 750$ MHz; $\sigma = 0.888$ S/m; $\epsilon_r = 40.956$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(9.34, 9.34, 9.34); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); 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) = 2.63 W/kg

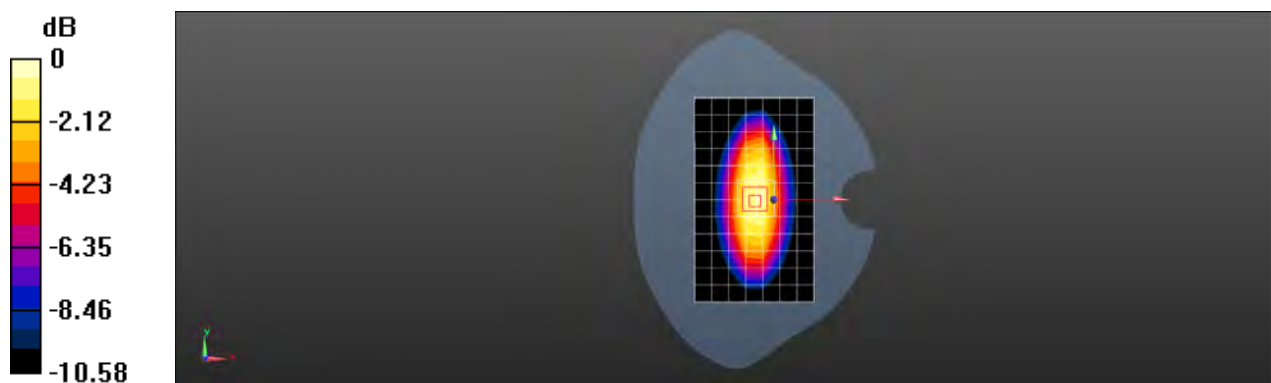
Body/d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 50.48 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 3.51 W/kg

SAR(1 g) = 2.17 W/kg; SAR(10 g) = 1.42 W/kg

Maximum value of SAR (measured) = 2.98 W/kg



0 dB = 2.98 W/kg = 4.74 dBW/kg

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; $\sigma = 0.938$ S/m; $\epsilon_r = 41.776$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(9.05, 9.05, 9.05); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Body/d=15mm, Pin=250mW/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.82 W/kg

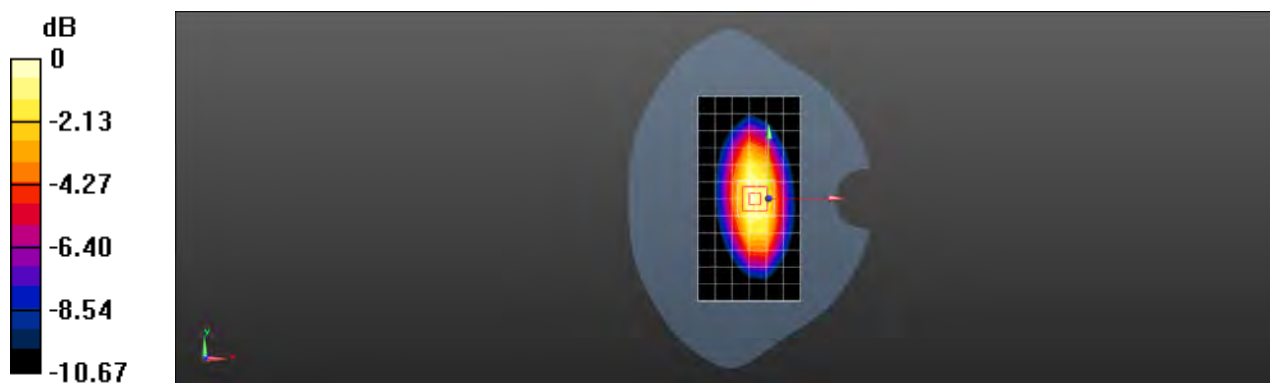
Body/d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 50.60 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 3.66 W/kg

SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.57 W/kg

Maximum value of SAR (measured) = 3.07 W/kg



0 dB = 3.07 W/kg = 4.87 dBW/kg

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; $\sigma = 0.885$ S/m; $\epsilon_r = 43.061$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(9.05, 9.05, 9.05); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); 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) = 2.97 W/kg

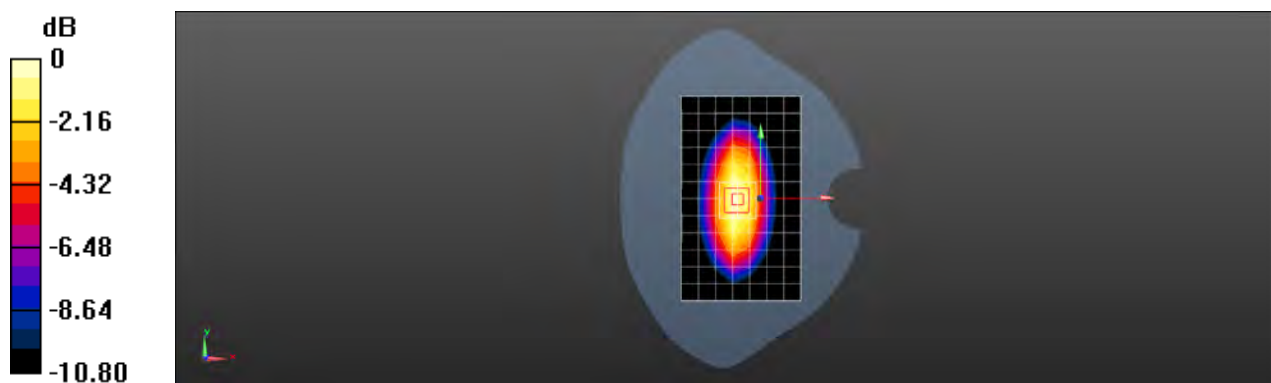
Body/d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 53.84 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 3.80 W/kg

SAR(1 g) = 2.46 W/kg; SAR(10 g) = 1.6 W/kg

Maximum value of SAR (measured) = 3.17 W/kg



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; $\sigma = 1.356$ S/m; $\epsilon_r = 41.979$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(7.81, 7.81, 7.81); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- 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) = 13.1 W/kg

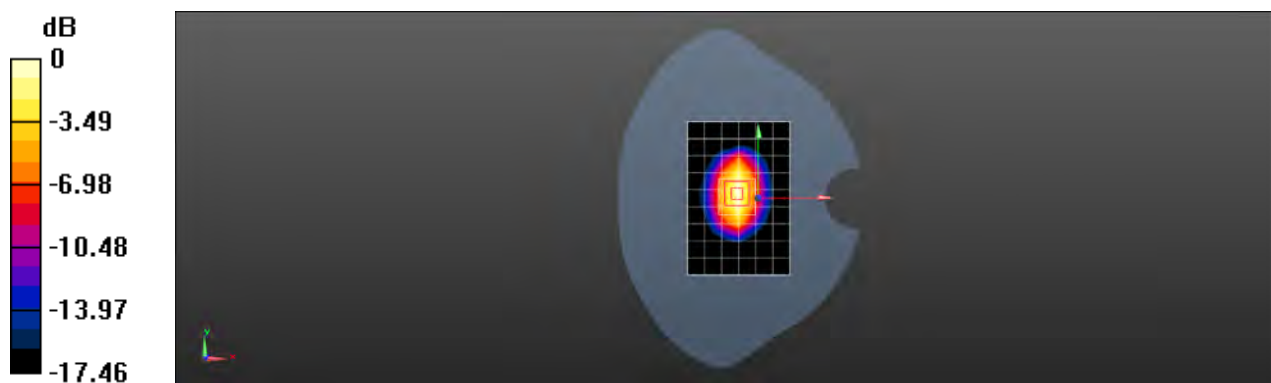
Body/d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 85.86 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 16.1 W/kg

SAR(1 g) = 8.73 W/kg; SAR(10 g) = 4.64 W/kg

Maximum value of SAR (measured) = 13.4 W/kg



0 dB = 13.4 W/kg = 11.27 dBW/kg

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; $\sigma = 1.33$ S/m; $\epsilon_r = 40.794$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(7.81, 7.81, 7.81); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- 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

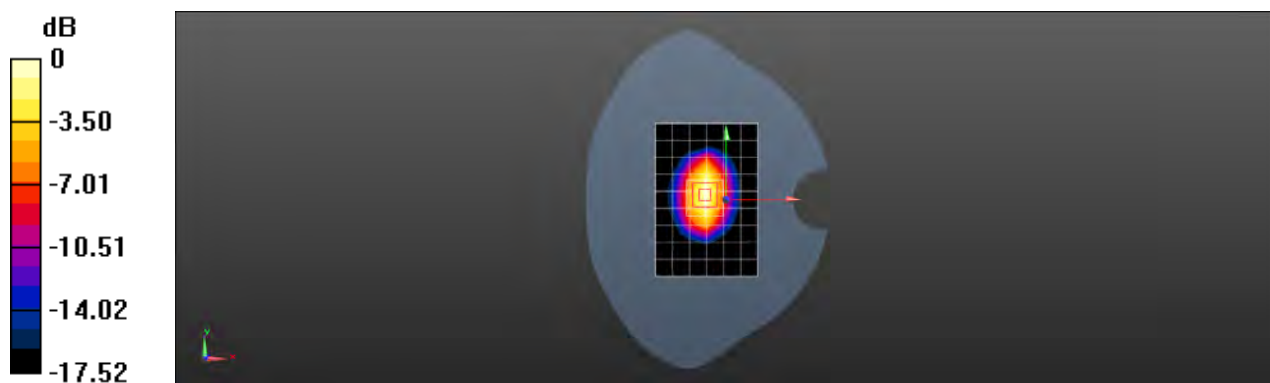
Body/d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 85.92 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 17.1 W/kg

SAR(1 g) = 9.25 W/kg; SAR(10 g) = 4.92 W/kg

Maximum value of SAR (measured) = 14.2 W/kg



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; $\sigma = 1.408$ S/m; $\epsilon_r = 41.526$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(7.61, 7.61, 7.61); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- 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

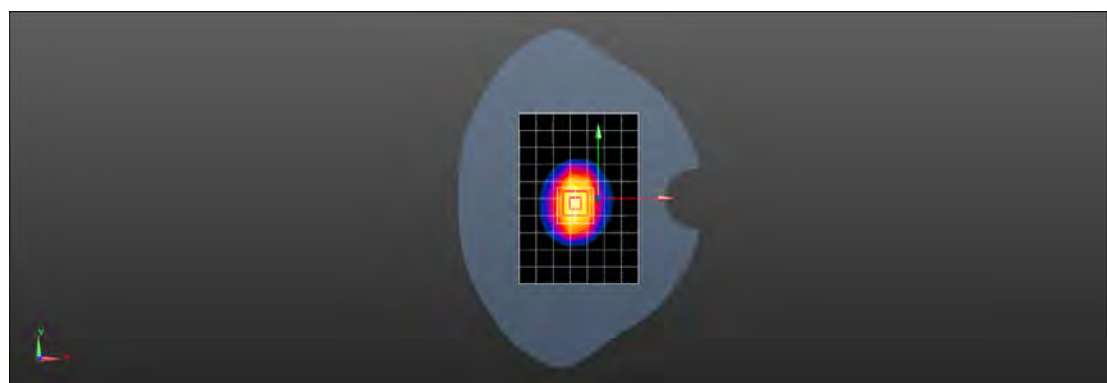
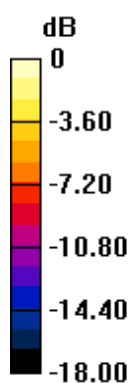
Body/d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

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

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; $\sigma = 1.456$ S/m; $\epsilon_r = 40.268$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(7.61, 7.61, 7.61); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- 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) = 10.1 W/kg

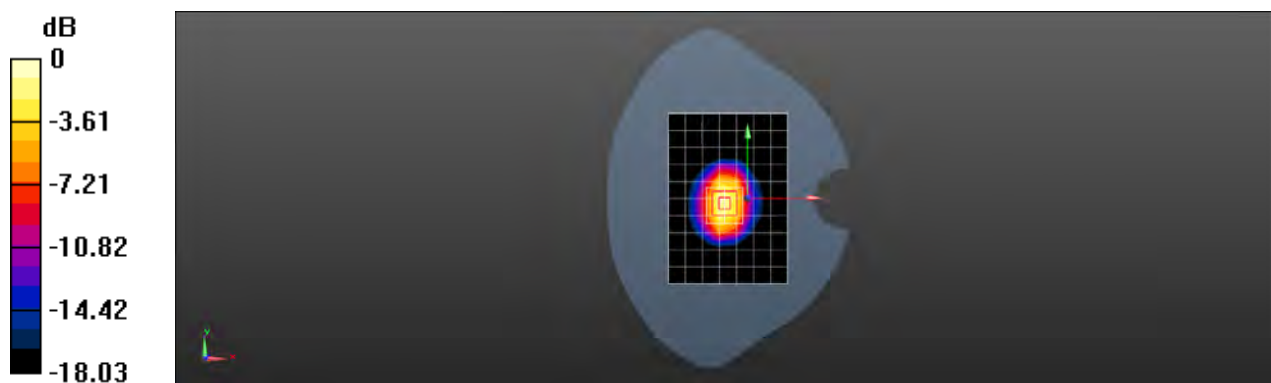
Body/d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 87.51 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 19.6 W/kg

SAR(1 g) = 10.5 W/kg; SAR(10 g) = 5.43 W/kg

Maximum value of SAR (measured) = 11.9 W/kg



0 dB = 11.9 W/kg = 10.76 dBW/kg

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; $\sigma = 1.852$ S/m; $\epsilon_r = 38.013$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(7.06, 7.06, 7.06); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- 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 (9x10x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 21.8 W/kg

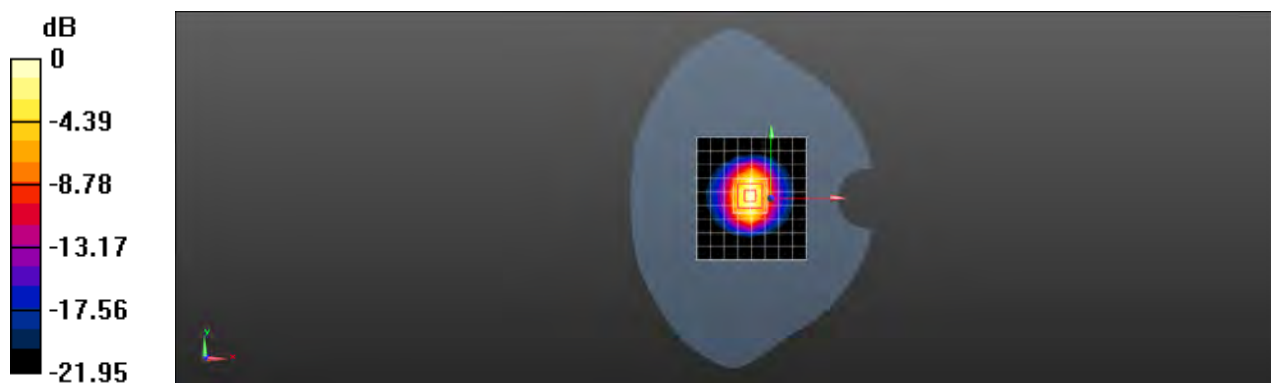
Body/d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 90.88 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 27.7 W/kg

SAR(1 g) = 13.5 W/kg; SAR(10 g) = 6.25 W/kg

Maximum value of SAR (measured) = 22.6 W/kg



0 dB = 22.6 W/kg = 13.54 dBW/kg

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; $\sigma = 2.027$ S/m; $\epsilon_r = 37.443$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(6.88, 6.88, 6.88); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- 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 (9x10x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 21.9 W/kg

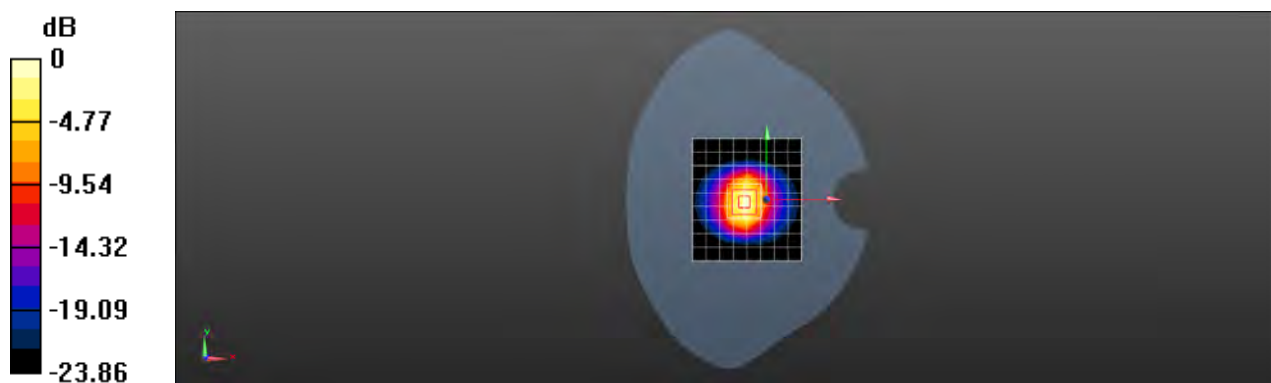
Body/d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 86.89 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 30.2 W/kg

SAR(1 g) = 14 W/kg; SAR(10 g) = 6.25 W/kg

Maximum value of SAR (measured) = 24.1 W/kg



0 dB = 24.1 W/kg = 13.82 dBW/kg



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. CDMA
CDMA BC0 for Head &Body
CDMA BC1 for Head &Body
CDMA BC10 for Head &Body
4. LTE
LTE Band 2 for Head &Body
LTE Band 4 for Head &Body
LTE Band 5 for Head &Body
LTE Band 12 for Head &Body
LTE Band 13 for Head &Body
LTE Band 25 for Head &Body
LTE Band 26 for Head &Body
LTE Band 41 for Head &Body
LTE Band 66 for Head &Body
LTE Band 71 for Head &Body
5. WIFI
WIFI 2.4G for Head &Body

Test Laboratory: SGS-SAR Lab

FR150 GSM 850 GSM 190CH Right cheek

DUT: FR150; Type: 4G Feature Phone; Serial: 354783970000322

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

Medium: HSL835; Medium parameters used: $f = 837$ MHz; $\sigma = 0.939$ S/m; $\epsilon_r = 41.761$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(9.05, 9.05, 9.05); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (7x10x1): Measurement grid: $dx=15$ mm, $dy=15$ mm
Maximum value of SAR (measured) = 0.300 W/kg

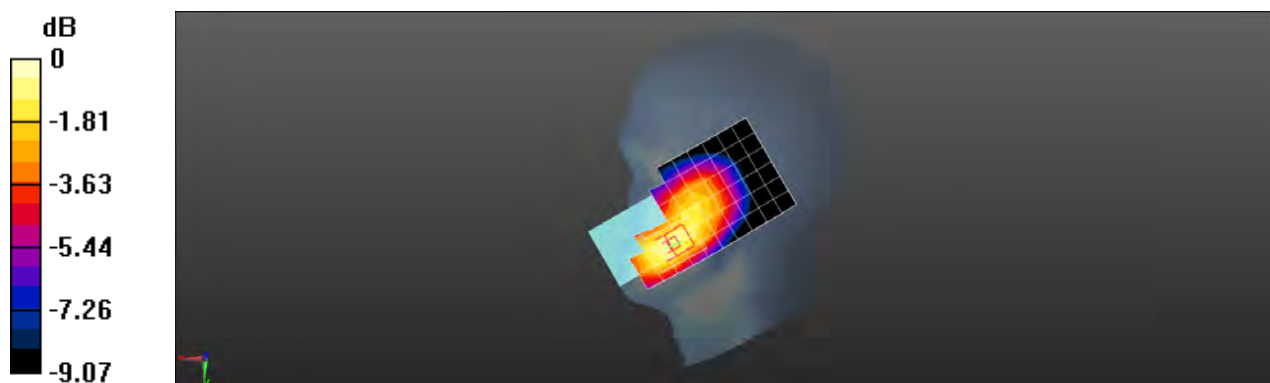
Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 5.988 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.379 W/kg

SAR(1 g) = 0.263 W/kg; SAR(10 g) = 0.195 W/kg

Maximum value of SAR (measured) = 0.320 W/kg



0 dB = 0.320 W/kg = -4.95 dBW/kg

Test Laboratory: SGS-SAR Lab

FR150 GSM 850 GSM 190CH Back side 15mm

DUT: FR150; Type: 4G Feature Phone; Serial: 354783970000322

Communication System: UID 0, GSM Only Communication System (0); Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: HSL835; Medium parameters used: $f = 837$ MHz; $\sigma = 0.939$ S/m; $\epsilon_r = 41.761$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(9.05, 9.05, 9.05); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (7x10x1): Measurement grid: $dx=15$ mm, $dy=15$ mm
Maximum value of SAR (measured) = 0.402 W/kg

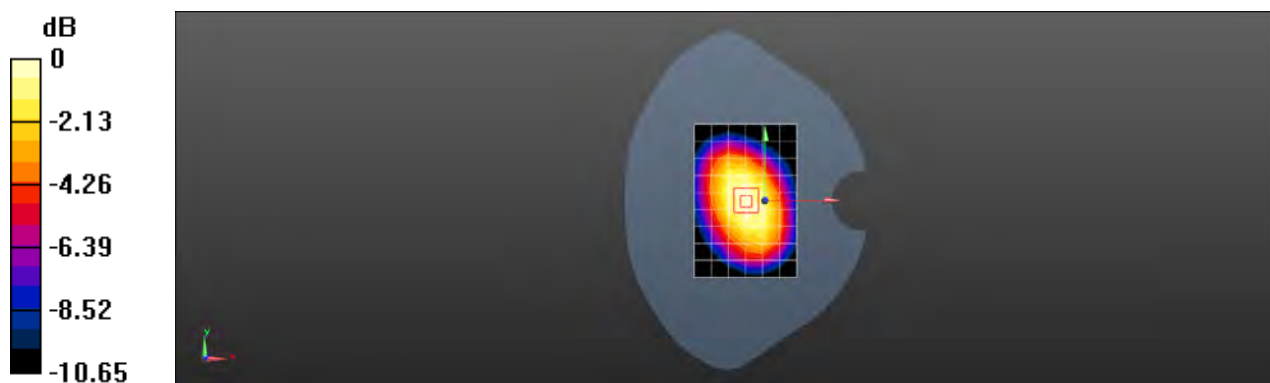
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 20.12 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.467 W/kg

SAR(1 g) = 0.337 W/kg; SAR(10 g) = 0.235 W/kg

Maximum value of SAR (measured) = 0.408 W/kg



0 dB = 0.408 W/kg = -3.89 dBW/kg

Test Laboratory: SGS-SAR Lab

FR150 GSM 850 GPRS 4TS 190CH Back side 10mm

DUT: FR150; Type: 4G Feature Phone; Serial: 354783970000322

Communication System: UID 0, GPRS/EGPRS Mode(4up) Communication System (0); Frequency: 836.6 MHz; Duty Cycle: 1:2.075

Medium: HSL835; Medium parameters used: $f = 837$ MHz; $\sigma = 0.939$ S/m; $\epsilon_r = 41.761$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(9.05, 9.05, 9.05); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (7x10x1): Measurement grid: $dx=15$ mm, $dy=15$ mm
Maximum value of SAR (measured) = 0.644 W/kg

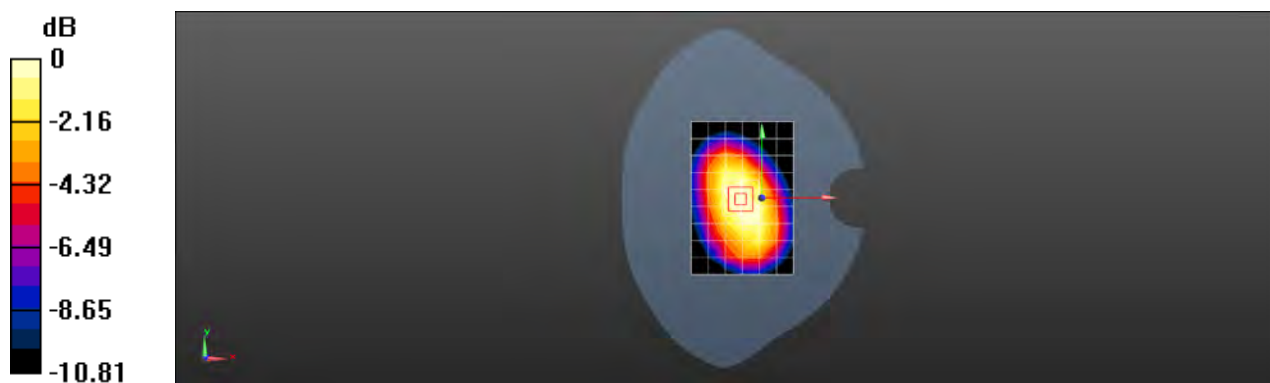
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 26.25 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.706 W/kg

SAR(1 g) = 0.512 W/kg; SAR(10 g) = 0.355 W/kg

Maximum value of SAR (measured) = 0.618 W/kg



0 dB = 0.618 W/kg = -2.09 dBW/kg

Test Laboratory: SGS-SAR Lab

FR150 GSM 1900 GSM 661CH Left cheek

DUT: FR150; Type: 4G Feature Phone; Serial: 354783970000322

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; $\sigma = 1.389$ S/m; $\epsilon_r = 41.563$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(7.61, 7.61, 7.61); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- 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: $dx=15$ mm, $dy=15$ mm
Maximum value of SAR (measured) = 0.135 W/kg

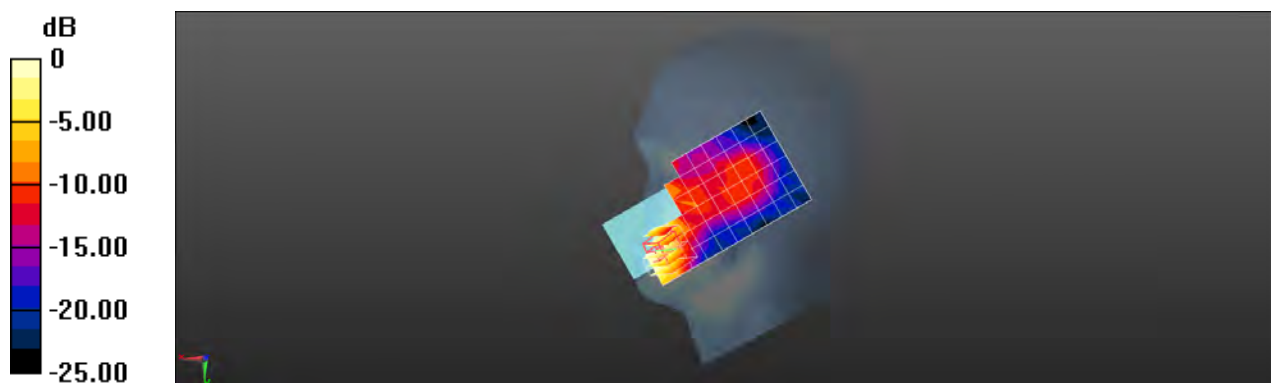
Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 2.037 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.170 W/kg

SAR(1 g) = 0.114 W/kg; SAR(10 g) = 0.071 W/kg

Maximum value of SAR (measured) = 0.142 W/kg



0 dB = 0.142 W/kg = -8.48 dBW/kg

Test Laboratory: SGS-SAR Lab

FR150 GSM 1900 GSM 661CH Back side 15mm

DUT: FR150; Type: 4G Feature Phone; Serial: 354783970000322

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; $\sigma = 1.389$ S/m; $\epsilon_r = 41.563$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(7.61, 7.61, 7.61); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (7x10x1): Measurement grid: $dx=15$ mm, $dy=15$ mm
Maximum value of SAR (measured) = 0.488 W/kg

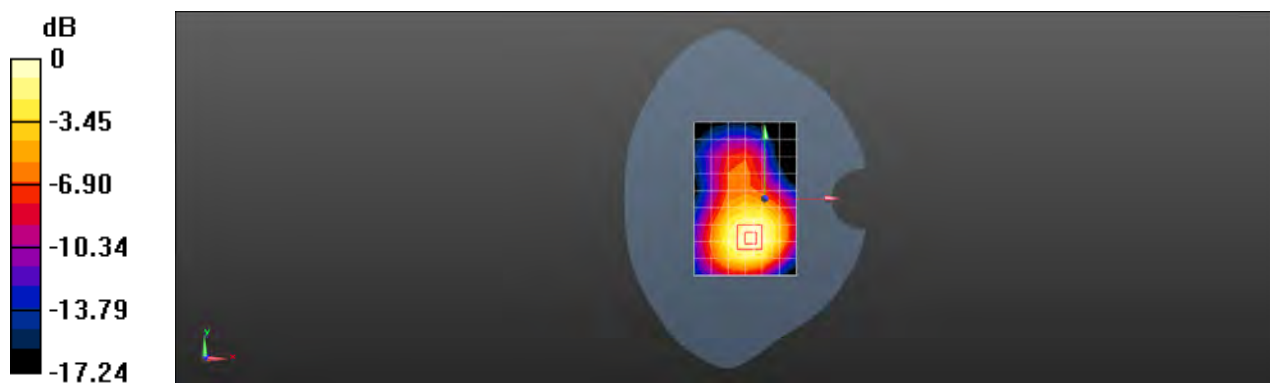
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 9.620 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.620 W/kg

SAR(1 g) = 0.385 W/kg; SAR(10 g) = 0.235 W/kg

Maximum value of SAR (measured) = 0.504 W/kg



0 dB = 0.504 W/kg = -2.98 dBW/kg

Test Laboratory: SGS-SAR Lab

FR150 GSM 1900 GPRS 4TS 512CH Back side 10mm

DUT: FR150; Type: 4G Feature Phone; Serial: 354783970000322

Communication System: UID 0, GPRS/EGPRS Mode(4up) Communication System (0); Frequency: 1850.2 MHz; Duty Cycle: 1:2.075

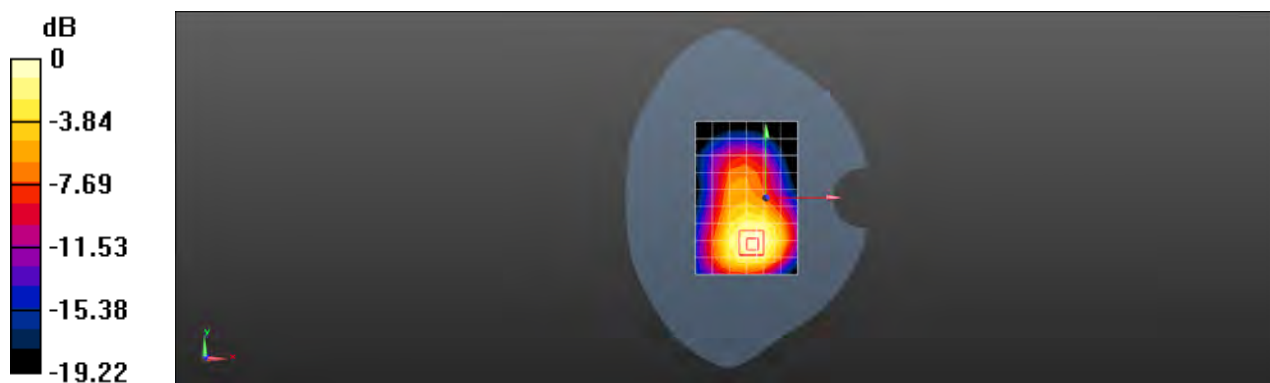
Medium: HSL1900; Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.356$ S/m; $\epsilon_r = 41.63$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(7.61, 7.61, 7.61); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (7x10x1): Measurement grid: $dx=15$ mm, $dy=15$ mm
Maximum value of SAR (measured) = 1.03 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm
Reference Value = 14.17 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.36 W/kg
SAR(1 g) = 0.837 W/kg; SAR(10 g) = 0.507 W/kg
Maximum value of SAR (measured) = 1.10 W/kg



0 dB = 1.10 W/kg = 0.41 dBW/kg

Test Laboratory: SGS-SAR Lab

FR150 WCDMA Band II 9538CH Left cheek

DUT: FR150; Type: 4G Feature Phone; Serial: 354783970000322

Communication System: UID 0, WCDMA (0); Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium parameters used: $f = 1908$ MHz; $\sigma = 1.415$ S/m; $\epsilon_r = 41.496$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(7.61, 7.61, 7.61); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- 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: $dx=15$ mm, $dy=15$ mm
Maximum value of SAR (measured) = 0.828 W/kg

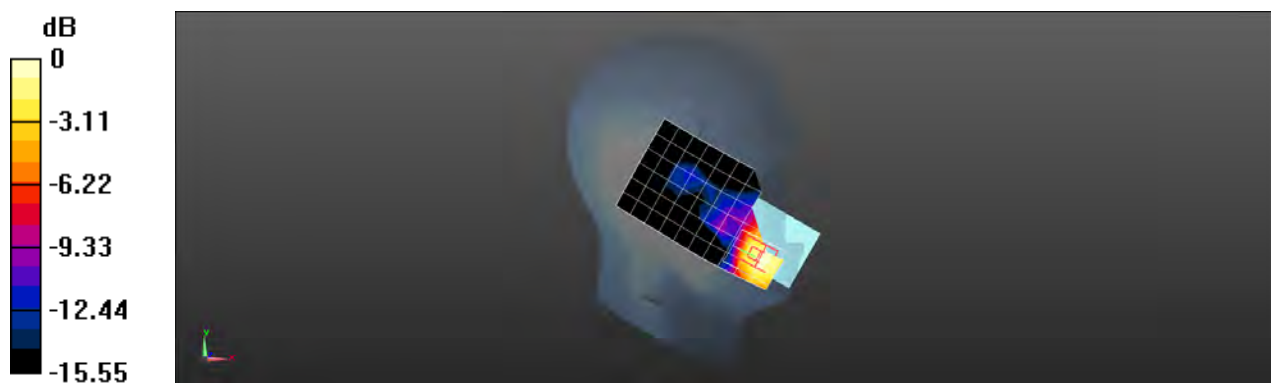
Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 3.486 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 1.08 W/kg

SAR(1 g) = 0.707 W/kg; SAR(10 g) = 0.443 W/kg

Maximum value of SAR (measured) = 0.898 W/kg



0 dB = 0.898 W/kg = -0.47 dBW/kg

Test Laboratory: SGS-SAR Lab

FR150 WCDMA Band II 9262CH Back side 19mm

DUT: FR150; Type: 4G Feature Phone; Serial: 354783970000322

Communication System: UID 0, WCDMA (0); Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.358$ S/m; $\epsilon_r = 41.623$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(7.61, 7.61, 7.61); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.11 W/kg

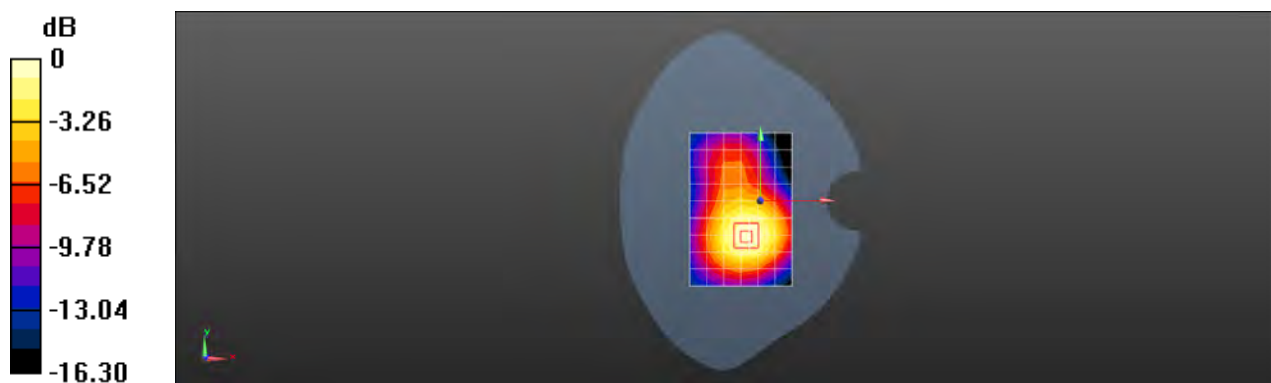
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.28 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 1.40 W/kg

SAR(1 g) = 0.880 W/kg; SAR(10 g) = 0.542 W/kg

Maximum value of SAR (measured) = 1.15 W/kg



0 dB = 1.15 W/kg = 0.61 dBW/kg

Test Laboratory: SGS-SAR Lab

FR150 WCDMA Band II 9262CH Back side 10mm

DUT: FR150; Type: 4G Feature Phone; Serial: 354783970000322

Communication System: UID 0, WCDMA (0); Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.358$ S/m; $\epsilon_r = 41.623$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(7.61, 7.61, 7.61); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.21 W/kg

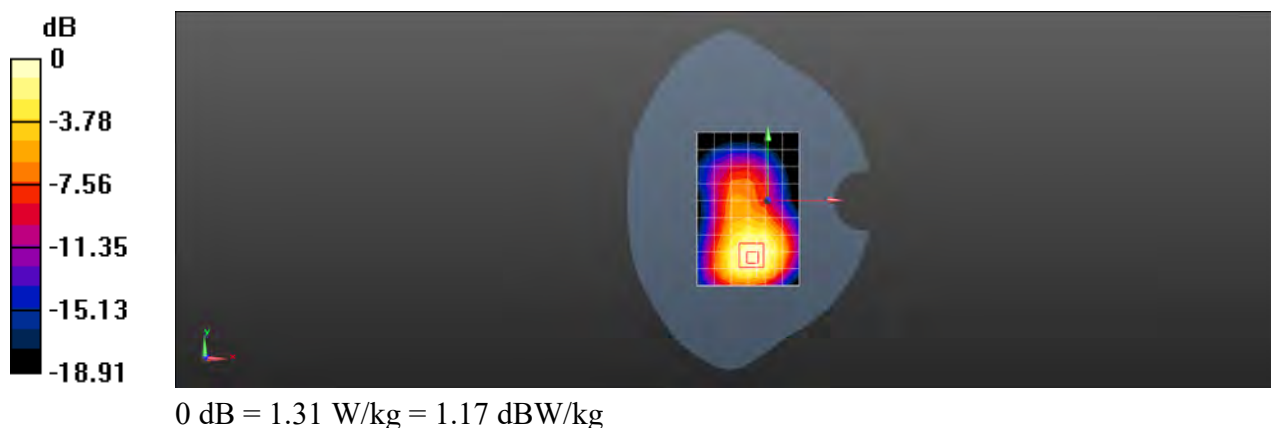
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.97 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 1.63 W/kg

SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.617 W/kg

Maximum value of SAR (measured) = 1.31 W/kg



Test Laboratory: SGS-SAR Lab

FR150 WCDMA Band IV 1412CH Right cheek

DUT: FR150; Type: 4G Feature Phone; Serial: 354783970000322

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

Medium: HSL1900; Medium parameters used (interpolated): $f = 1732.4$ MHz; $\sigma = 1.237$ S/m; $\epsilon_r = 42.034$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(7.81, 7.81, 7.81); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- 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: $dx=15$ mm, $dy=15$ mm
Maximum value of SAR (measured) = 0.178 W/kg

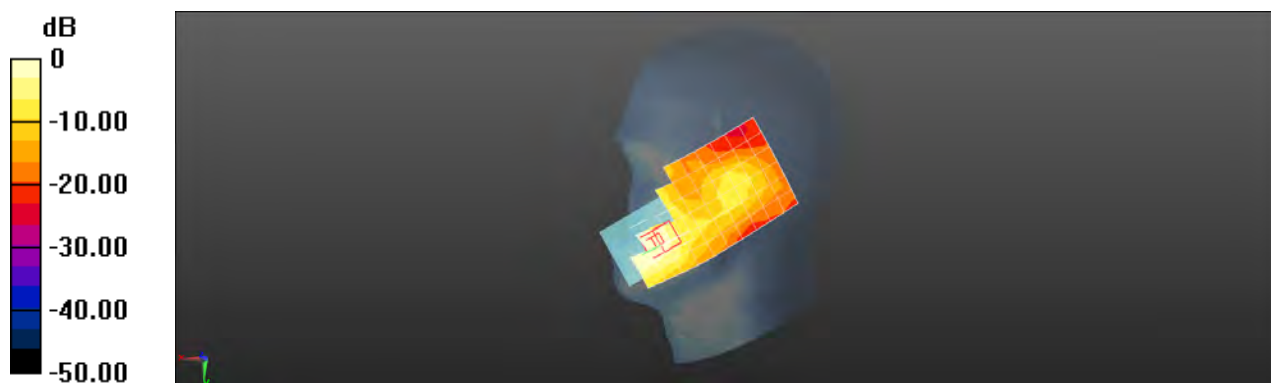
Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 2.823 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.220 W/kg

SAR(1 g) = 0.146 W/kg; SAR(10 g) = 0.091 W/kg

Maximum value of SAR (measured) = 0.182 W/kg



0 dB = 0.182 W/kg = -7.40 dBW/kg

Test Laboratory: SGS-SAR Lab

FR150 WCDMA Band IV 1513CH Back side 19mm

DUT: FR150; Type: 4G Feature Phone; Serial: 354783970000322

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

Medium: HSL1750; Medium parameters used: $f = 1753$ MHz; $\sigma = 1.26$ S/m; $\epsilon_r = 41.972$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(7.81, 7.81, 7.81); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.949 W/kg

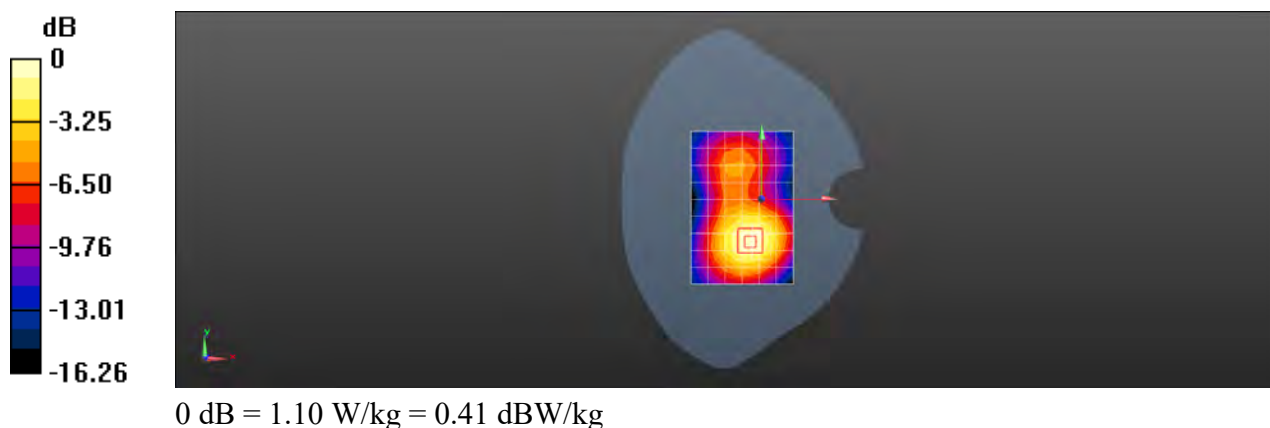
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.48 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 1.33 W/kg

SAR(1 g) = 0.838 W/kg; SAR(10 g) = 0.511 W/kg

Maximum value of SAR (measured) = 1.10 W/kg



Test Laboratory: SGS-SAR Lab

FR150 WCDMA Band V 4182CH Right cheek

DUT: FR150; Type: 4G Feature Phone; Serial: 354783970000322

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; $\sigma = 0.929$ S/m; $\epsilon_r = 42.528$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(9.05, 9.05, 9.05); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Head/Area Scan (7x10x1): Measurement grid: $dx=15$ mm, $dy=15$ mm
Maximum value of SAR (measured) = 0.649 W/kg

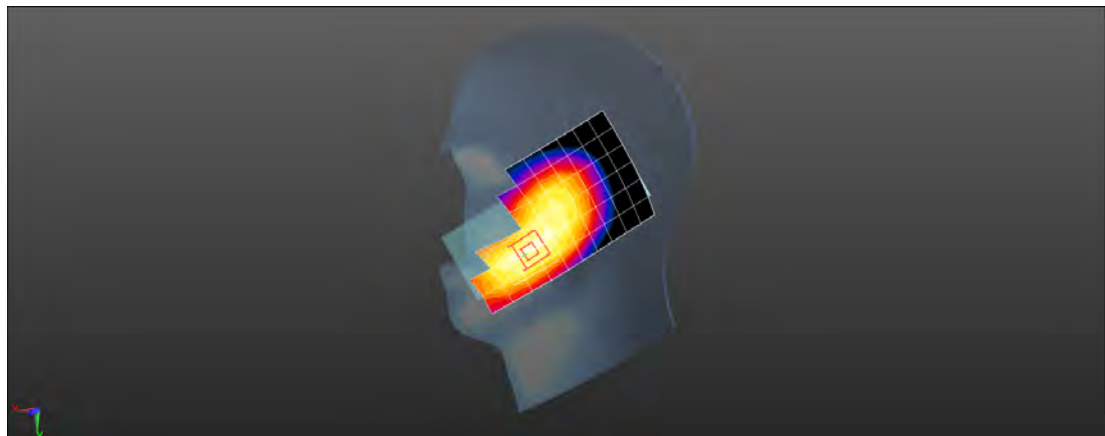
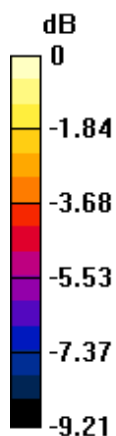
Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 9.163 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.989 W/kg

SAR(1 g) = 0.610 W/kg; SAR(10 g) = 0.406 W/kg

Maximum value of SAR (measured) = 0.804 W/kg



0 dB = 0.804 W/kg = -0.95 dBW/kg

Test Laboratory: SGS-SAR Lab

FR150 WCDMA Band V 4182CH Back side 15mm

DUT: FR150; Type: 4G Feature Phone; Serial: 354783970000322

Communication System: UID 0, WCDMA (0); Frequency: 836.4 MHz; Duty Cycle: 1:1

Medium: HSL835; Medium parameters used (interpolated): $f = 836.4$ MHz; $\sigma = 0.939$ S/m; $\epsilon_r = 41.761$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(9.05, 9.05, 9.05); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.617 W/kg

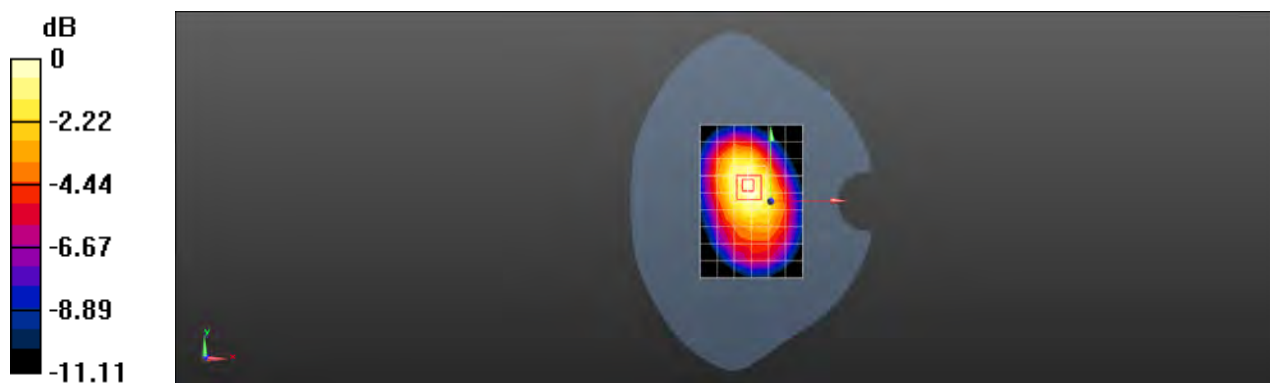
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.38 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.738 W/kg

SAR(1 g) = 0.516 W/kg; SAR(10 g) = 0.354 W/kg

Maximum value of SAR (measured) = 0.635 W/kg



0 dB = 0.635 W/kg = -1.97 dBW/kg

Test Laboratory: SGS-SAR Lab

FR150 WCDMA Band V 4132CH Back side 10mm

DUT: FR150; Type: 4G Feature Phone; Serial: 354783970000322

Communication System: UID 0, WCDMA (0); Frequency: 826.4 MHz; Duty Cycle: 1:1

Medium: HSL835; Medium parameters used (interpolated): $f = 826.4$ MHz; $\sigma = 0.932$ S/m; $\epsilon_r = 41.848$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(9.05, 9.05, 9.05); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- Phantom: SAM 3; Type: SAM; Serial: 1912
- DASY52 52.8.8(1222); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (7x10x1): Measurement grid: $dx=15$ mm, $dy=15$ mm
Maximum value of SAR (measured) = 0.773 W/kg

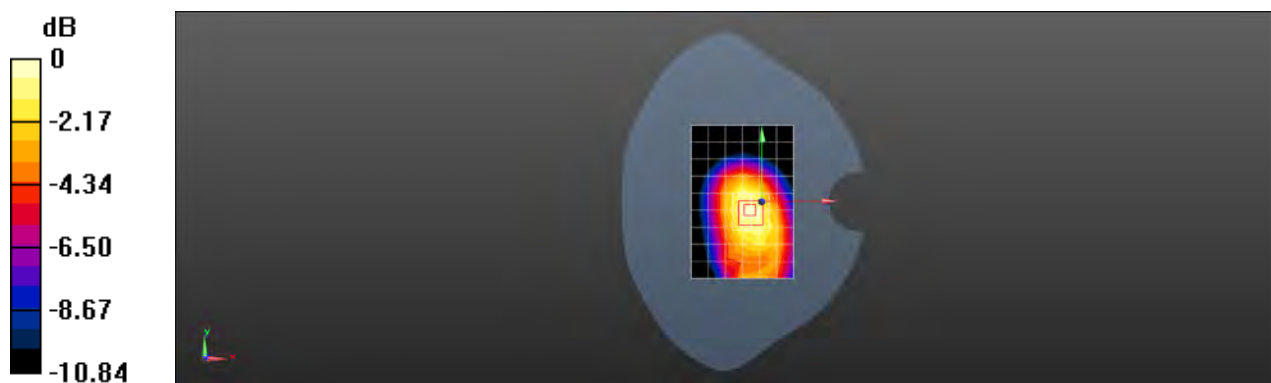
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 26.83 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.967 W/kg

SAR(1 g) = 0.686 W/kg; SAR(10 g) = 0.470 W/kg

Maximum value of SAR (measured) = 0.837 W/kg



0 dB = 0.837 W/kg = -0.77 dBW/kg

Test Laboratory: SGS-SAR Lab

FR150 CDMA BC0 RC3+SO55 384CH Right cheek

DUT: FR150; Type: 4G Feature Phone; Serial: 354783970000322

Communication System: UID 0, CDMA (0); Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: HSL835; Medium parameters used: $f = 837$ MHz; $\sigma = 0.939$ S/m; $\epsilon_r = 41.761$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(9.05, 9.05, 9.05); Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn896; Calibrated: 2020-06-11
- 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: $dx=15$ mm, $dy=15$ mm
Maximum value of SAR (measured) = 0.607 W/kg

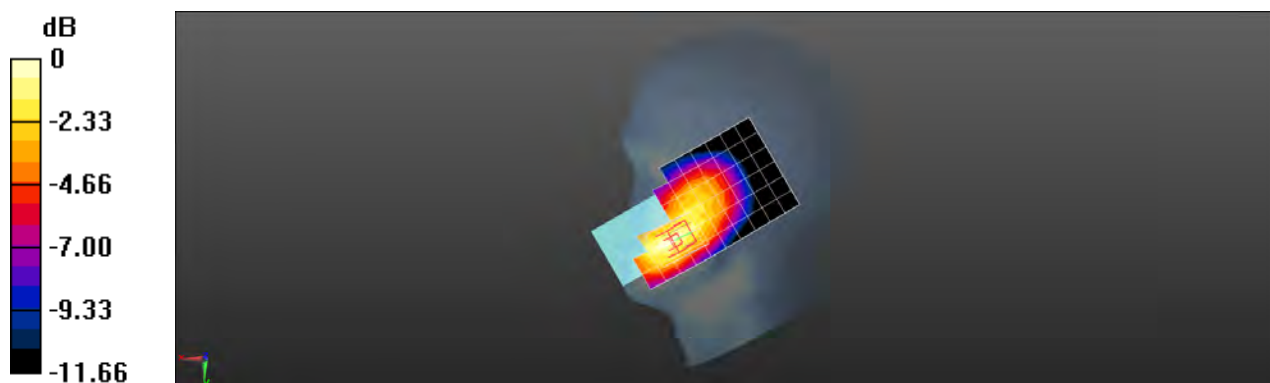
Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 5.635 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.775 W/kg

SAR(1 g) = 0.490 W/kg; SAR(10 g) = 0.315 W/kg

Maximum value of SAR (measured) = 0.632 W/kg



0 dB = 0.632 W/kg = -1.99 dBW/kg

Test Laboratory: SGS-SAR Lab

FR150 CDMA BC0 RC3+SO32 384CH Back side 15mm

DUT: FR150; Type: 4G Feature Phone; Serial: 354783970000322

Communication System: UID 0, CDMA BC0; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: HSL835; Medium parameters used: $f = 837$ MHz; $\sigma = 0.93$ S/m; $\epsilon_r = 42.526$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3793; ConvF(9.05, 9.05, 9.05) @ 836.52 MHz; Calibrated: 2020-05-09
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn754; Calibrated: DAE not calibrated
- Phantom: SAM 7; Type: SAM; Serial: 1027
- DASY52 4.7.80(0); SEMCAD X 14.6.13(7474)

Configuration/Body/Area Scan (7x10x1): Measurement grid: $dx=15$ mm, $dy=15$ mm
Maximum value of SAR (measured) = 0.583 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 21.61 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.660 W/kg

SAR(1 g) = 0.494 W/kg; SAR(10 g) = 0.355 W/kg

Maximum value of SAR (measured) = 0.588 W/kg

