



SAR TEST REPORT

Application No.: KSCR2109000071AT (SZCR2109023127AT)
Applicant: PAX TECHNOLOGY LIMITED
Address of Applicant: Room 2416, 24/F, Sun Hung Kai Centre, 30 Harbour Road, Wanchai, Hong Kong
Manufacturer: PAX Computer Technology(Shenzhen) Co., Ltd.
Address of Manufacturer: 4/F, No.3 Building, Software Park, Second Central Science-Tech Road, High-Tech industrial Park, Shenzhen, Guangdong, P.R.C.
Factory: Guangzhou PAX Computer Technology Co., Ltd.
Address of Factory: No.2 Bldg, No.113 Jinyang Road, Hualong Town, Panyu, Guangzhou, Guangdong, China
Product Name: Mobile Payment Cell Phone
Model No.(EUT): M50
Trade mark: PAX
FCC ID: V5PM50
Standard(s) : FCC 47CFR §2.1093
Date of Receipt: 2021-09-16
Date of Test: 2021-09-26 to 2021-09-28
Date of Issue: 2021-10-15

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Eric Lin

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

Revision Record			
Version	Description	Date	Remark
00	Original Changed the shell and frame.	2021-10-15	Base on KSEM2101000002CR

Authorized for issue by:			
	Richard.Kong/ Project Engineer		
	Eric.Lin/Reviewer		

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TEST SUMMARY

Frequency Band	Maximum Reported SAR(W/kg)		
	Head	Body-worn	Hotspot
WCDMA Band II	0.06	0.42	0.42
WCDMA Band IV	0.02	0.44	0.44
WCDMA Band V	0.06	0.21	0.21
LTE Band 2	0.05	0.33	0.33
LTE Band 4	0.08	0.35	0.35
LTE Band 5	0.05	0.18	0.18
LTE Band 12	0.08	0.17	0.17
LTE Band 13	0.05	0.16	0.16
WI-FI (2.4GHz)	0.45	0.13	0.17
WI-FI (5GHz)	0.64	0.68	0.50
Bluetooth	0.11	0.04	/
SAR Limited(W/kg)	1.6		
Maximum Simultaneous Transmission SAR (W/kg)			
Scenario	Head	Body-worn	Hotspot
Sum SAR	0.69	0.97	0.80
SPLSR	N/A	N/A	N/A
SPLSR Limited	0.04		

Note: According to TCB workshop October,2014 RF Exposure Procedures Update(Overlapping LTE Bands), SAR for LTE Band 17 (Frequency range:704-716 MHz) is covered by LTE Band 12 (Frequency range:699-716 MHz), due to similar frequency range, same maximum tune up limit and same channel bandwidth.



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1 General Information

1.1 General Description of EUT

Device Type :	portable device		
Exposure Category:	uncontrolled environment / general population		
Product Phase:	production unit		
SN:	2250000694		
Software	V0.0.0.6		
FVIN:	15.1.01		
HVIN:	M50		
Antenna Type:	PIFA Antenna		
Device Operating Configurations :			
Modulation Mode:	WCDMA: QPSK;LTE: QPSK,16QAM; WI-FI: CCK,DSSS,OFDM; BT: GFSK, π/4DQPSK,8DPSK		
Antenna Gain:	BT/ BLE/ WiFi2.4GHz: 1dBi WiFi 5GHz: 1dBi WCDMA Band V/ LTE 5/12/13/17: 0.5dBi WCDMA Band II/IV/ LTE 2/4: 1dBi		
Device Class:	B		
GPRS Multi-slots Class:	12	EGPRS Multi-slots Class:	12
HSDPA UE Category:	14	HSUPA UE Category	6
Power Class:	3, tested with power control "all 1"(WCDMA Band II/IV/V)		
	3, tested with power control Max Power(LTE Band 2/4/5/12/13/17)		
Frequency Bands:	Band	Tx (MHz)	Rx (MHz)
	WCDMA Band II	1850~1910	1930~1990
	WCDMA Band IV	1710~1755	2110~2155
	WCDMA Band V	824~849	869~894
	LTE Band 2	1850~1910	1930~1990
	LTE Band 4	1710~1755	2110~2155
	LTE Band 5	824~849	869~894
	LTE Band 12	699~716	729~746
	LTE Band 13	777~787	746~756
	LTE Band 17	704~716	734~746
	WI-FI2.4G	2412~2462	2412~2462
	Bluetooth	2402~2480	2402~2480
	Wi-Fi(U-NII-1)	5150~5250	5150~5250
	Wi-Fi(U-NII-2A)	5250~5350	5250~5350
	Wi-Fi(U-NII-2C)	5470~5725	5470~5725
	Wi-Fi(U-NII-3)	5725~5850	5725~5850
* IC do not support the frequency of 5600MHz~5650MHz.			
Battery1 Information:	Model: IBS012NA		
	Rated capacity: 3020mAh		
	Manufacturer: ICON ENERGY SYSTEM (SHENZHEN) CO.,LTD.		

Note1:

The antenna gain value is provided by the customer. The test lab will not be responsible for wrong test result due to incorrect information about antenna gain values.



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Remark:

The difference between sample 1 and sample 2 is that Sample 2 changed the shell and frame.

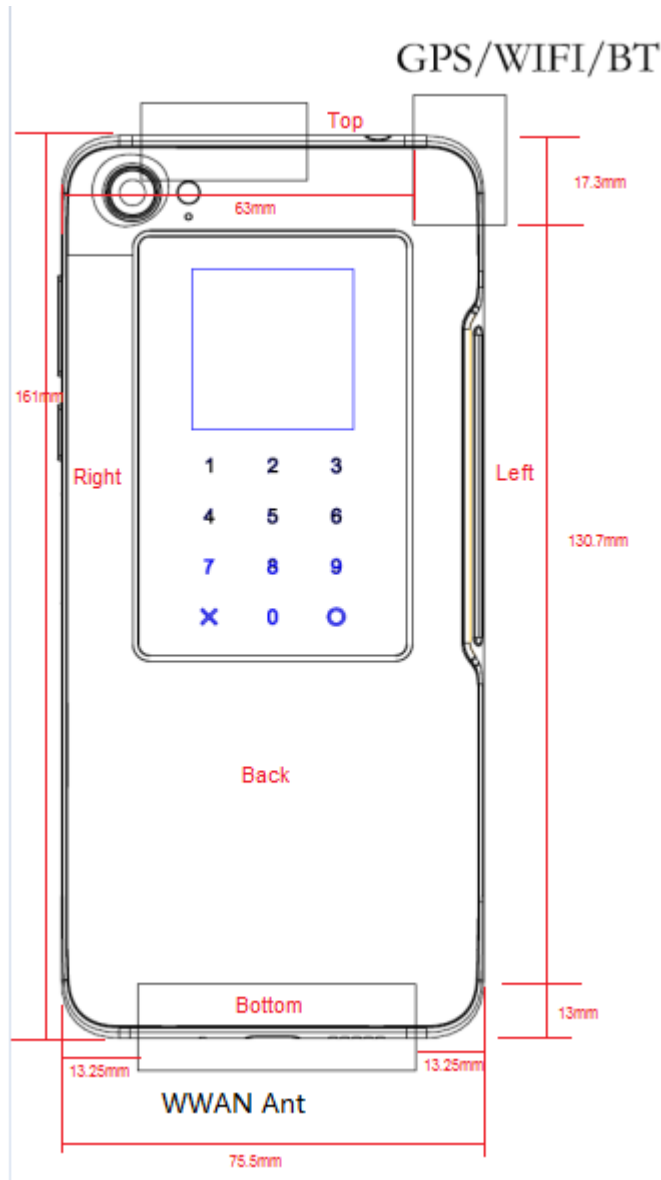
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1.1.1 DUT Antenna Locations(Back View)



The test device is a Mobile Payment Cell Phone. The display diagonal dimension is 145mm and the overall diagonal dimension of this device is 171.5mm.

According to the distance between LTE/WCDMA/Wi-Fi/BT antennas and the sides of the EUT we can draw the conclusion that:

EUT Sides for SAR Testing						
Mode	Front	Back	Left	Right	Top	Bottom
Main Antenna	Yes	Yes	Yes	Yes	No	Yes

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Wi-Fi/BT	Yes	Yes	Yes	No	Yes	No
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Table 1: EUT Sides for SAR Testing

Note:

- 1) When the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.



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EMC Laboratory

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1.2 Test Specification

Identity	Document Title
FCC 47CFR §2.1093	Radio frequency Radiation Exposure Evaluation: Portable Devices
ANSI/IEEE Std C95.1 – 2019	IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 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 Procedures v03r01	3G SAR Measurement Procedures
KDB 248227 D01 802.11 Wi-Fi SAR v02r02	SAR GUIDANCE FOR IEEE 802.11 (Wi-Fi) TRANSMITTERS
KDB 941225 D05 SAR for LTE Devices v02r05	SAR EVALUATION CONSIDERATIONS FOR LTE DEVICES
KDB 941225 D06 Hotspot Mode SAR v02r01	SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities
KDB 648474 D04 Handset SAR v01r03	SAR Evaluation Considerations for Wireless Handsets
KDB447498 D01 General RF Exposure Guidance v06	Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies
KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04	SAR Measurement Requirements for 100 MHz to 6 GHz
KDB 865664 D02 RF Exposure Reporting v01r02	RF Exposure Compliance Reporting and Documentation Considerations



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1.3 RF exposure limits

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

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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Compliance Certification Services (Kunshan) Inc.
EMC Laboratory

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1.4 Test Location

Company: Compliance Certification Services Inc. Kun shan Laboratory
 Address: No.10 Weiye Rd., Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China
 Post code: 215300
 Telephone: 86-512-57355888
 Fax: 86-512-57370818

1.5 Test Facility

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

- **CNAS (No. CNAS L4354)**

CNAS has accredited Compliance Certification Services (Kunshan) Inc. 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. 2541.01)**

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

- **FCC –Designation Number: CN1172**

Compliance Certification Services Inc. has been recognized as an accredited testing laboratory.
 Designation Number: CN1172.

- **ISED (CAB identifier: CN0072)**

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory
 CAB Identifier: CN0072.

- **VCCI (Member No.: 1938)**

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-1600, C-1707, T-1499, G-10216 respectively.

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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.

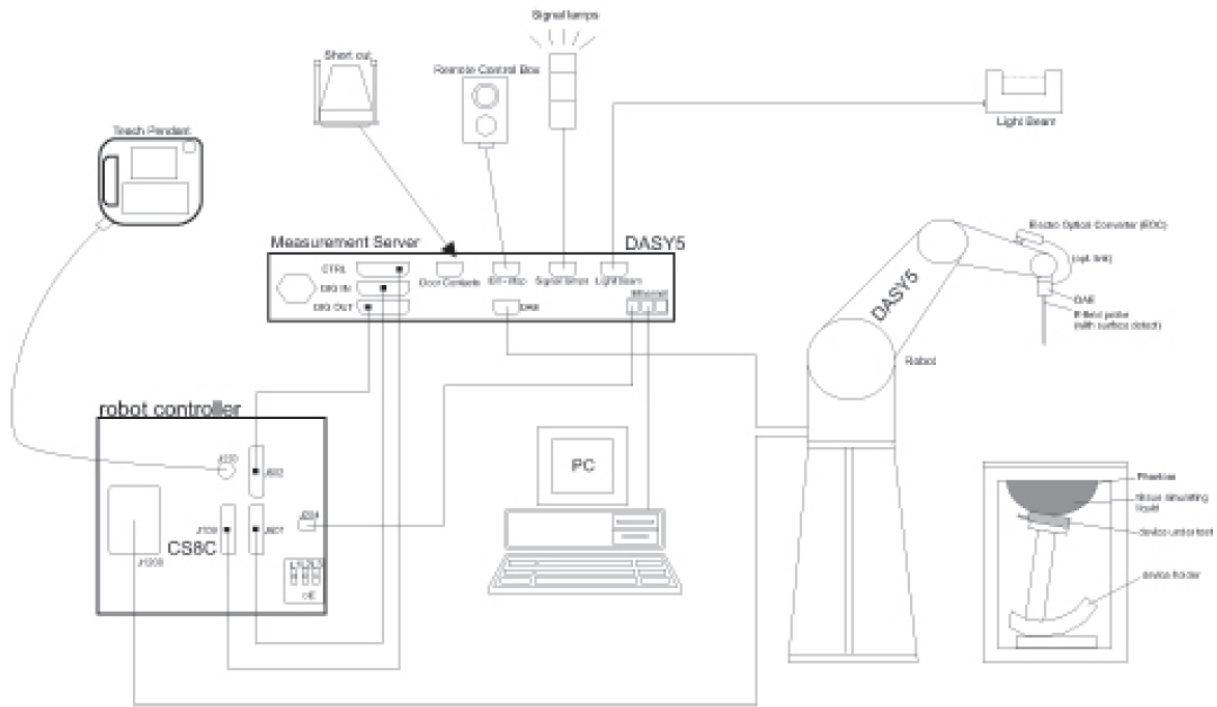
The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.



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F-1. SAR Measurement System Configuration

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

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3.2 Isotropic E-field Probe EX3DV4

	<p>Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)</p>
<p>Calibration</p>	<p>ISO/IEC 17025 calibration service available.</p>
<p>Frequency</p>	<p>10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)</p>
<p>Directivity</p>	<p>± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)</p>
<p>Dynamic Range</p>	<p>10 μW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μW/g)</p>
<p>Dimensions</p>	<p>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</p>
<p>Application</p>	<p>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%.</p>
<p>Compatibility</p>	<p>DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI</p>



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3.3 Data Acquisition Electronics (DAE)

Model	DAE4	
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.

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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.



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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 30mm*30mm*30mm (fine resolution volume scan, zoom scan) was assessed by measuring 5x5x7 points ($\leq 2\text{GHz}$) and 7x7x7 points ($\geq 2\text{GHz}$). 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. 1528-2003.



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		≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface		5 ± 1 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° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area}		≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
		When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom} , Δy_{Zoom}		≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm 3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5 · $\Delta z_{Zoom}(n-1)$
Minimum zoom scan volume	x, y, z	≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.			

Step 4: Power reference measurement (drift)

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



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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 “.DAE3”. 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:

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

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

U_i = input signal of channel i ($i = x, y, z$)

cf = crest factor of exciting field (DASY parameter)

dcpi = diode compression point (DASY parameter)



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

E-field probes:

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

H-field probes:

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

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

$Norm_i$ = sensor sensitivity of channel i ($i = x, y, z$)

[mV/(V/m)²] for E-field Probes

ConvF = sensitivity enhancement in solution

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

f = carrier frequency [GHz]

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

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

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

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

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.

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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.



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5 Description of Test Position

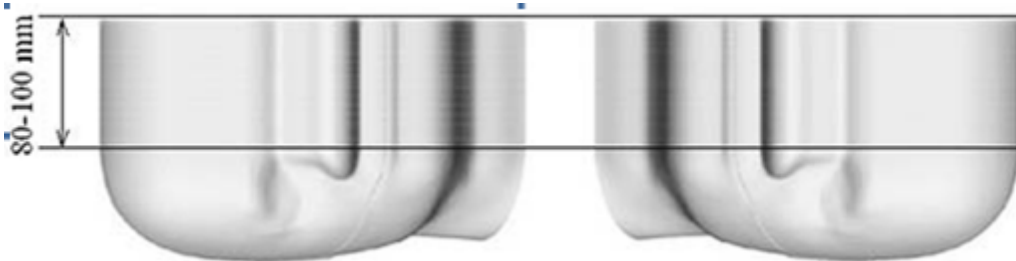
5.1 The Head Test Position

5.1.1 SAM Phantom Shape

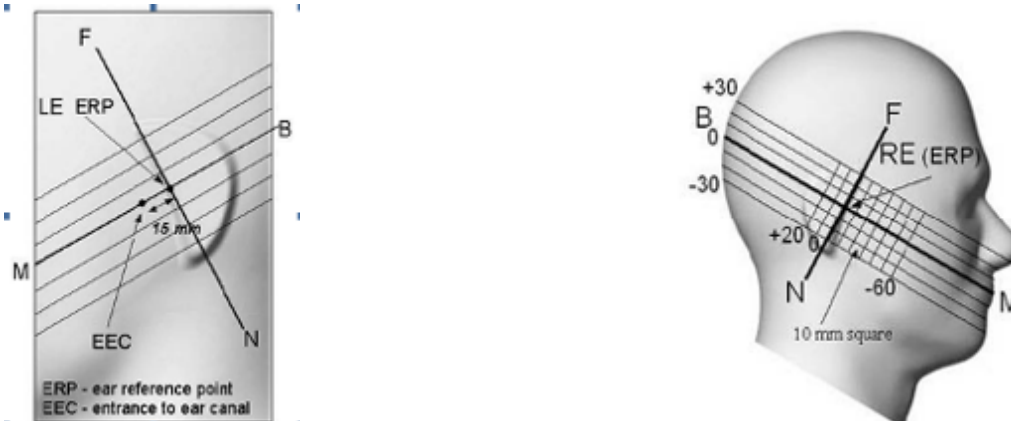


F-3. Front, back, and side views of SAM (model for the phantom shell). Full-head model is for illustration purposes only-procedures in this recommended practice are intended primarily for the phantom setup.

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)



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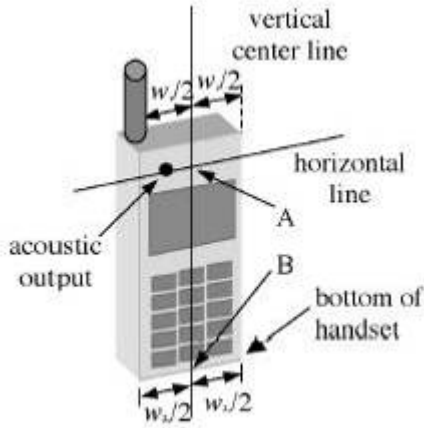
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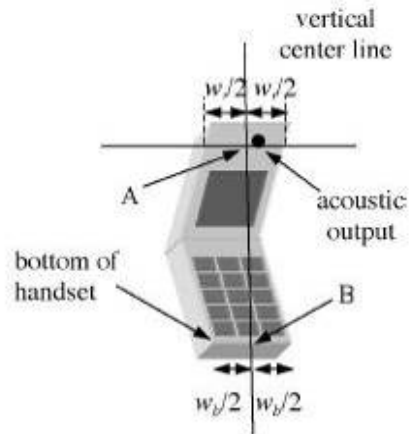
F-5. Close-up side view of phantom, showing the ear region, N-F and B-M lines, and seven cross-sectional plane locations

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.

5.1.4 Definition of the “tilted” position

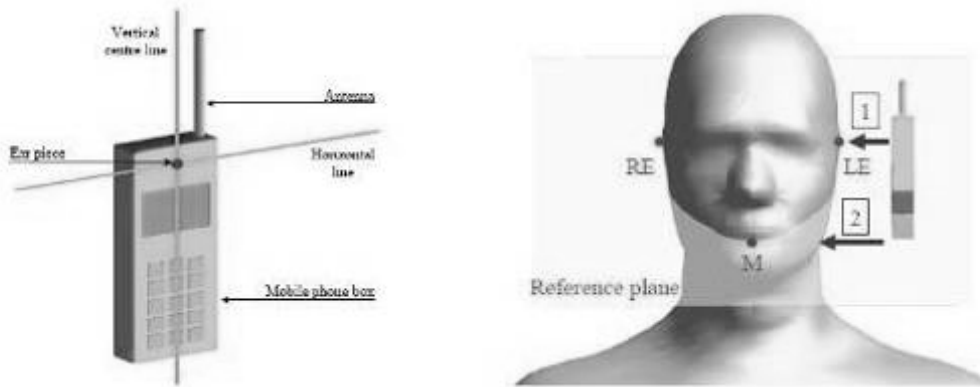
- Position the device in the “cheek” position described above;
- While maintaining the device in the reference plane described above and pivoting against the ear, move it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost.

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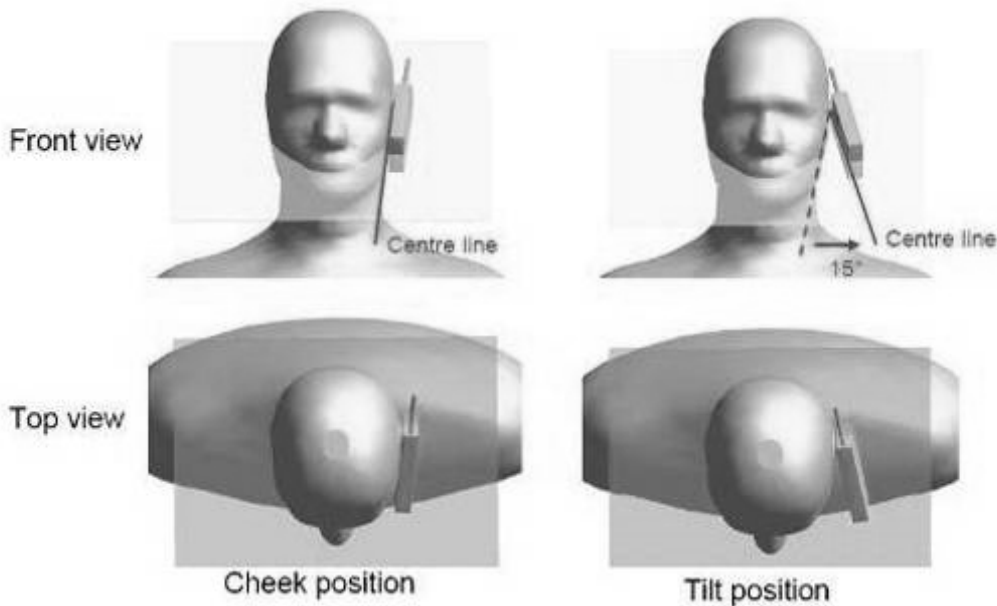
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F-9. Definition of the reference lines and points, on the phone and on the phantom and initial position



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



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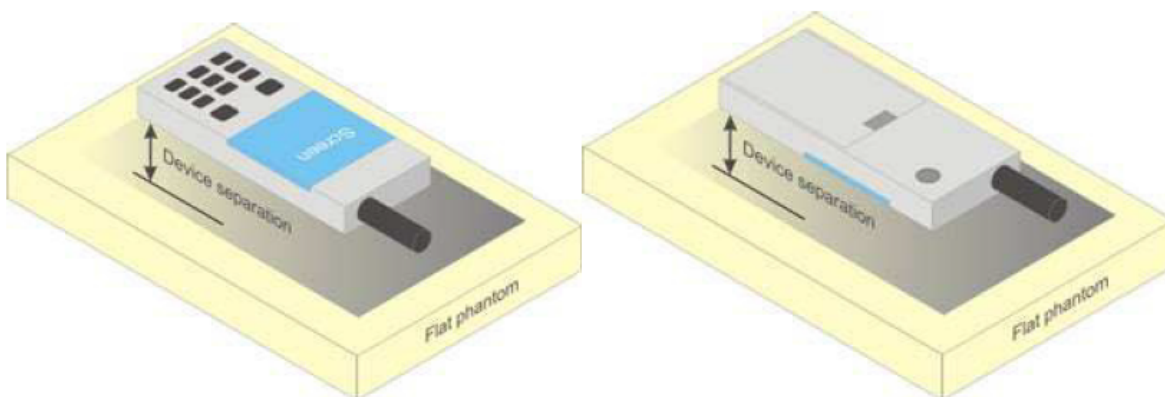
5.2 The Body Test Position

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

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5.2.1 Wireless Router exposure conditions

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

For this device, the test distance of hotspot mode and Body worn mode are all 10mm. The test data can be shared.

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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		835		915		1900		2450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (S/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

HSL5GHz is composed of the following ingredients:
 Water: 50-65%
 Mineral oil: 10-30%
 Emulsifiers: 8-25%
 Sodium salt: 0-1.5%

MSL5GHz is composed of the following ingredients:
 Water: 64-78%
 Mineral oil: 11-18%
 Emulsifiers: 9-15%
 Sodium salt: 2-3%

Table 3: Recipe of Tissue Simulate Liquid



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6.1.2 Test Liquids Confirmation

Simulated tissue liquid parameter confirmation

The dielectric parameters were checked prior to assessment using the SPEAG DAK3.5 dielectric probe kit. The dielectric parameters measured are reported in each correspondent section.

IEEE SCC-34/SC-2 P1528 recommended tissue dielectric parameters

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations and extrapolated according to the head parameters specified in P1528

Target Frequency (MHz)	Head		Body	
	ϵ_r	σ (S/m)	ϵ_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800-2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

(ϵ_r = relative permittivity, σ = conductivity and $\rho = 1000 \text{ kg/m}^3$)



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6.1.3 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 $22\pm 2^{\circ}\text{C}$.

Frequency (MHz)	Tissue Type	Liquid Temp. ($^{\circ}\text{C}$)	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Measured Date
750 Head	750	0.879	42.786	0.89	41.90	-1.24	2.11	± 5	22.1	2021/9/26
835 Head	835	0.904	42.233	0.90	41.50	0.44	1.77	± 5	22.1	2021/9/26
1800 Head	1800	1.384	40.258	1.40	40.00	-1.14	0.65	± 5	22.2	2021/9/27
1900 Head	1900	1.373	40.580	1.40	40.00	-1.93	1.45	± 5	22.3	2021/9/27
2450 Head	2450	1.809	38.753	1.80	39.20	0.50	-1.14	± 5	22	2021/9/28
5250 Head	5250	4.655	36.108	4.71	35.95	-1.17	0.44	± 5	22.2	2021/9/28



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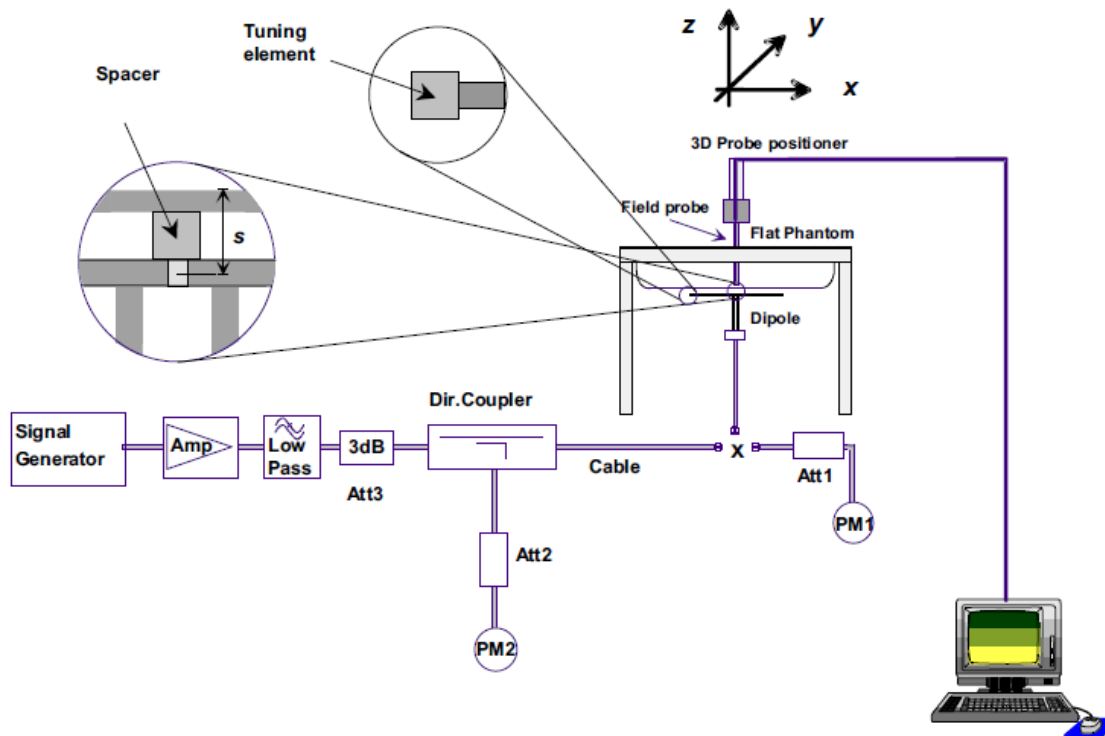
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6.2 SAR System Check

The microwave circuit arrangement for system check is sketched in bellow figure. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values. The tests were conducted on the same days as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the following table. During the tests, the ambient temperature of the laboratory was in the range 22±2°C, the relative humidity was in the range 60% and the liquid depth above the ear reference points was above 15 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 verification

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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)		
D750 V2	Head	2.22	1.37	8.88	5.48	8.23 (7.41~9.05)	5.41 (4.87~5.95)	22.1	2021/9/26
D835 V2	Head	2.37	1.53	9.48	6.12	9.41 (8.47~10.35)	6.25 (5.63~6.88)	22.1	2021/9/26
D1800 V2	Head	9.52	4.92	38.08	19.68	38.4 (34.56~42.24)	20.2 (18.18~22.22)	22.2	2021/9/27
D1900 V2	Head	9.78	5.13	39.12	20.52	39.7 (35.73~43.67)	20.5 (18.45~22.55)	22.3	2021/9/27
D2450 V2	Head	13	5.94	52	23.76	53 (47.70~58.30)	24.6 (22.14~27.60)	22	2021/9/28
Validation Kit		Measured SAR 100mW	Measured SAR 100mW	Measured SAR (normalized to 1w)	Measured SAR (normalized to 1w)	Target SAR (normalized to 1w) (±10%)	Target SAR (normalized to 1w) (±10%)	Liquid Temp. (°C)	Measured Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)		
D5GHz V2	Head (5.25GHz)	7.91	2.27	79.1	22.7	77.7 (69.93~85.47)	22.4 (20.16~24.64)	22.2	2021/9/28

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 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

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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.

Sub-test	β_c	β_d	$\beta_d(SF)$	β_c/β_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: Δ_{ACK} , Δ_{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, Δ_{ACK} 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



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

Note 1: $\Delta ACK, \Delta NACK$ 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 difference³
 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 $\beta_d = 15/15$ ³
 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 $\beta_d = 15/15$ ³
 Note 5 : Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g³
 Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.³

Table 6: Subtests for WCDMA 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	4	4	10	2	20000	2.00
	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 7: HSUPA UE category



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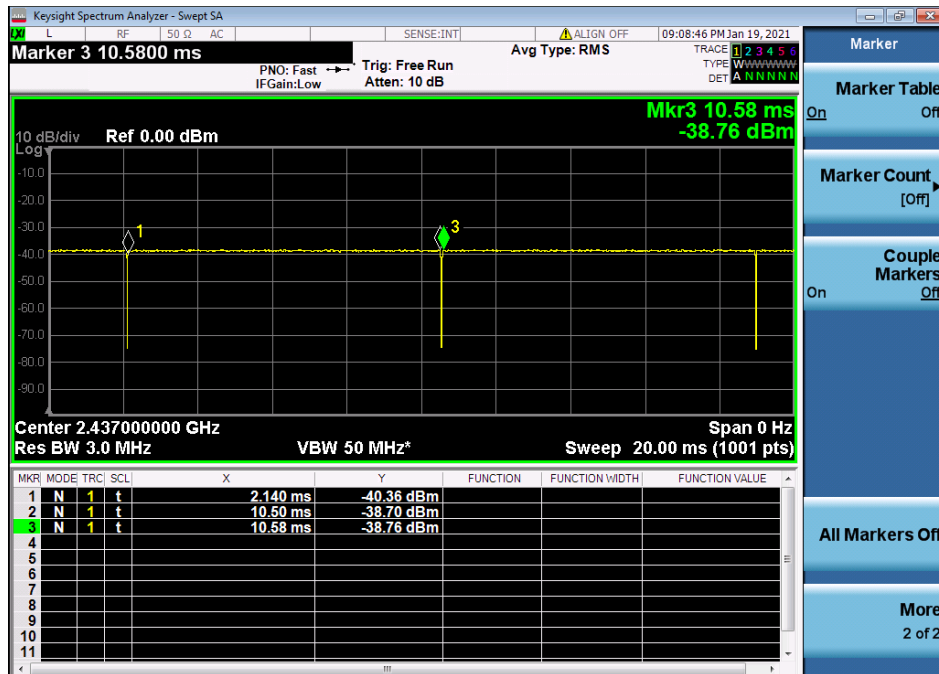
7.2.2 Wi-Fi Test Configuration

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.

7.2.2.1 Duty cycle

1) 2.4GHz Wi-Fi 802.11b:

$$\text{WI-FI 802.11b 1M: Duty cycle} = (10.5 - 2.14) / (10.58 - 2.14) = 99.05\%$$



7.2.2.2 Duty cycle

2) 5GHz Wi-Fi 802.11a:

$$\text{WI-FI 802.11a 6M: Duty cycle} = (3.265 - 1.88) / (3.325 - 1.88) = 95.85\%$$



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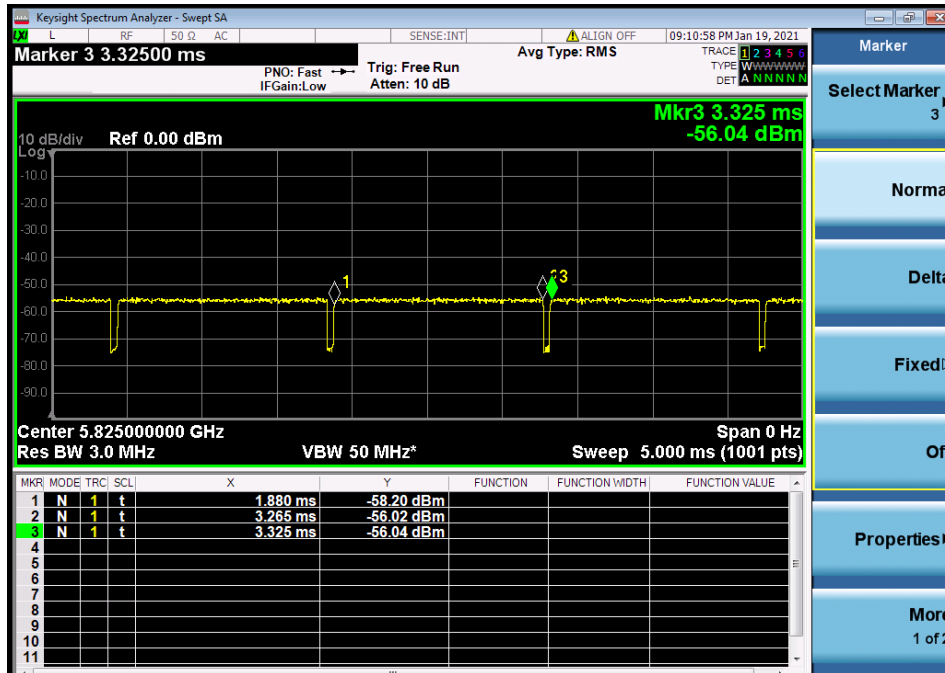
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7.2.2.3 Initial Test Position SAR Test Reduction Procedure

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.

7.2.2.4 Initial Test Configuration Procedures

An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth,



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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.

7.2.2.5 Subsequent Test Configuration Procedures

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

- 1) . When SAR test exclusion provisions of KDB Publication 447498 are applicable and SAR measurement is not required for the initial test configuration, SAR is also not required for the next highest maximum output power transmission mode subsequent test configuration(s) in that frequency band or aggregated band and exposure configuration.
- 2) . When the highest *reported* SAR for the initial test configuration (when applicable, include subsequent highest output channels), according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for that subsequent test configuration.
- 3) . The number of channels in the initial test configuration and subsequent test configuration can be different due to differences in channel bandwidth. When SAR measurement is required for a subsequent test configuration and the channel bandwidth is smaller than that in the initial test configuration, all channels in the subsequent test configuration that overlap with the larger bandwidth channel tested in the initial test configuration should be used to determine the highest maximum output power channel. This step requires additional power measurement to identify the highest maximum output power channel in the subsequent test configuration to determine SAR test reduction.
 - a) SAR should first be measured for the channel with highest measured output power in the subsequent test configuration.
 - b) SAR for subsequent highest measured maximum output power channels in the subsequent test configuration is required only when the *reported* SAR of the preceding higher maximum output power channel(s) in the subsequent test configuration is > 1.2 W/kg or until all required channels are tested. i) For channels with the same measured maximum output power, SAR should be measured using the channel closest to the center frequency of the larger channel bandwidth channel in the initial test configuration.
- 4) . SAR measurements for the remaining highest specified maximum output power OFDM transmission mode configurations that have not been tested in the initial test configuration (highest maximum output) or subsequent test configuration(s) (subsequent next highest maximum output power) is determined by recursively applying the subsequent test configuration procedures in this section to the remaining configurations according to the following:

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- a) replace “subsequent test configuration” with “next subsequent test configuration” (i.e., subsequent next highest specified maximum output power configuration)
- b) replace “initial test configuration” with “all tested higher output power configurations”

7.2.2.6 2.4 GHz Wi-Fi 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.

7.2.2.7 5 GHz Wi-Fi SAR Procedures

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

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

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

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independently for SAR. SAR is not required when the 160 MHz channel is operating at a reduced maximum power and also qualifies for SAR test exclusion.

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

The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, all channels that operate at 5.60 – 5.65 GHz must be included to apply the SAR test reduction and measurement procedures.

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

- **OFDM Transmission Mode SAR Test Configuration and Channel Selection Requirements**

The initial test configuration for 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined according to the following steps applied sequentially.

- 1) The largest channel bandwidth configuration is selected among the multiple configurations with the same specified maximum output power.
- 2) If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.
- 3) If multiple configurations have the same specified maximum output power, largest channel bandwidth and lowest order modulation, the lowest data rate configuration among these configurations is selected.
- 4) When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n. After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following. These channel selection procedures apply to both the initial test configuration and subsequent test configuration(s), with respect to the default power measurement procedures or additional power measurements required for further SAR test reduction. The same procedures also apply to subsequent highest output power channel(s) selection.
 - a) The channel closest to mid-band frequency is selected for SAR measurement.
 - b) For channels with equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

- **SAR Test Requirements for OFDM configurations**

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

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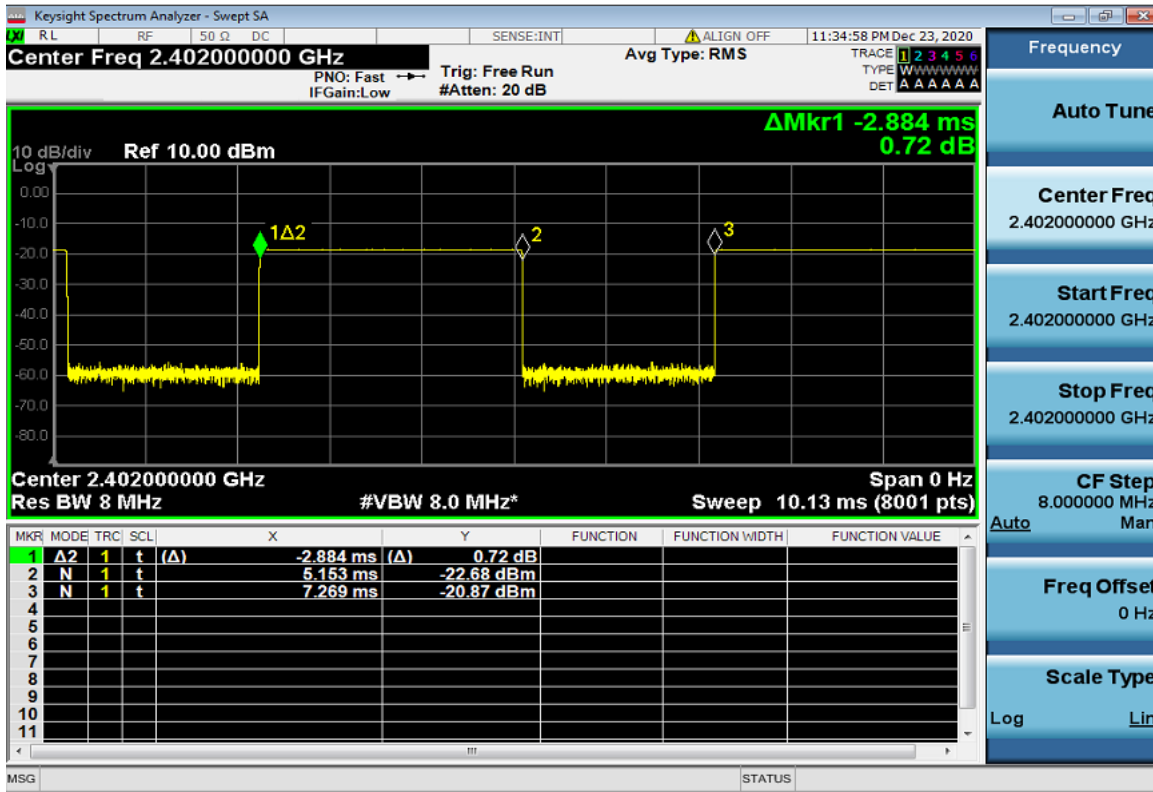


7.2.3 BluetoothTest Configuration

For the Bluetooth SAR tests, a communication link is set up with the test mode software for BT mode test. Bluetooth USES frequency hopping technology to divide the transmitted data into packets and transmit the packets respectively through 79 designated Bluetooth channels, 1MHz Bandwidth, frequency hops at 1600 hops/second per the Bluetooth standard. The Radio Frequency Channel Number (RFCN) is allocated to 0, 39 and 78 respectively in the case of 2402~2480 MHz during the test at each test frequency channel, the EUT is operated at the RF continuous emission mode.

7.2.3.1 Duty cycle

Bluetooth duty cycle: $5.153/7.269 = 70.89\%$



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7.2.4 LTE Test Configuration

LTE modes were tested according to FCC KDB 941225 D05 publication. Please see notes after the tabulated SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 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.

A) A-MPR

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

B) 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.

C) 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

8.1.1 Conducted Power Of WCDMA

WCDMA Band II					
Average Conducted Power(dBm)					
Channel		9262	9400	9538	Tune up
WCDMA	12.2kbps RMC	22.21	22.19	22.14	23
HSDPA	Subtest 1	17.9	17.87	17.66	18
	Subtest 2	17.42	17.35	17.61	18
	Subtest 3	17.9	17.86	17.64	18
	Subtest 4	17.34	17.87	17.66	18
HSUPA	Subtest 1	17.41	17.34	17.84	18
	Subtest 2	17.9	17.35	17.61	18
	Subtest 3	17.65	17.38	17.3	18
	Subtest 4	17.71	17.63	17.32	18
	Subtest 5	17.71	17.88	17.59	18

WCDMA Band IV					
Average Conducted Power(dBm)					
Channel		1312	1412	1513	Tune up
WCDMA	12.2kbps RMC	22.08	22.05	21.9	23
HSDPA	Subtest 1	17.7	17.47	17.1	18
	Subtest 2	17.53	17.22	17.59	18
	Subtest 3	17.5	17.7	17.4	18
	Subtest 4	17.72	17.15	17.4	18
HSUPA	Subtest 1	17.27	17.45	17.58	18
	Subtest 2	17.72	17.45	17.35	18
	Subtest 3	17.73	17.68	17.05	18
	Subtest 4	17.19	17.45	17.34	18
	Subtest 5	17.74	17.67	17.35	18

WCDMA Band V					
Average Conducted Power(dBm)					
Channel		4132	4182	4233	Tune up
WCDMA	12.2kbps RMC	23	22.93	23.07	23.5
HSDPA	Subtest 1	18.5	18.65	18.77	19
	Subtest 2	18.21	18.62	18.23	19
	Subtest 3	18.5	18.63	18.75	19
	Subtest 4	18.73	18.13	18.6	19
HSUPA	Subtest 1	18.51	18.45	18.28	19
	Subtest 2	18.56	18.15	18.61	19

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	Subtest 3	18.75	18.44	18.28	19
	Subtest 4	18.25	18.44	18.58	19
	Subtest 5	18.75	18.66	18.6	19

Table 8: Conducted Power Of WCDMA



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8.1.2 Conducted Power Of LTE

LTE Band 2				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18607	18900	19193	
1.4MHz	QPSK	1	0	21.54	21.47	21.38	22.5
		1	2	21.67	21.57	21.48	22.5
		1	5	21.52	21.47	21.37	22.5
		3	0	21.37	21.29	21.25	21.5
		3	2	21.39	21.39	21.21	21.5
		3	3	21.4	21.37	21.26	21.5
	16QAM	6	0	20.59	20.53	20.48	21.5
		1	0	20.58	20.61	20.38	21.5
		1	2	20.71	20.77	20.5	21.5
		1	5	20.63	20.64	20.39	21.5
		3	0	20.4	20.35	20.33	20.5
		3	2	20.39	20.35	20.31	20.5
		3	3	20.35	20.36	20.38	20.5
		6	0	19.56	19.55	19.48	20.5
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18615	18900	19185	
3MHz	QPSK	1	0	21.54	21.55	21.48	22.5
		1	7	21.67	21.66	21.57	22.5
		1	14	21.53	21.52	21.43	22.5
		8	0	20.52	20.51	20.51	21.5
		8	4	20.59	20.53	20.49	21.5
		8	7	20.57	20.5	20.4	21.5
	16QAM	15	0	20.58	20.49	20.46	21.5
		1	0	21.2	20.56	20.66	21.5
		1	7	21.3	20.68	20.74	21.5
		1	14	21.14	20.52	20.62	21.5
		8	0	19.75	19.59	19.48	20.5
		8	4	19.79	19.59	19.44	20.5
		8	7	19.77	19.56	19.38	20.5
		15	0	19.71	19.56	19.44	20.5
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18625	18900	19175	
5MHz	QPSK	1	0	21.5	21.45	21.46	22.5
		1	13	21.6	21.53	21.48	22.5
		1	24	21.45	21.43	21.35	22.5
		12	0	20.51	20.5	20.48	21.5
		12	6	20.6	20.55	20.53	21.5
		12	13	20.63	20.49	20.32	21.5
		25	0	20.57	20.51	20.43	21.5
	16QAM	1	0	20.42	20.56	20.67	21.5

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Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18650	18900	19150	
10MHz	QPSK	1	0	21.6	21.54	21.51	22.5
		1	25	21.67	21.69	21.65	22.5
		1	49	21.53	21.53	21.42	22.5
		25	0	20.58	20.53	20.39	21.5
		25	13	20.64	20.56	20.52	21.5
		25	25	20.63	20.56	20.48	21.5
	16QAM	50	0	20.62	20.55	20.44	21.5
		1	0	21.2	20.56	20.71	21.5
		1	25	21.3	20.72	20.82	21.5
		1	49	21.15	20.53	20.58	21.5
		25	0	19.67	19.59	19.45	20.5
		25	13	19.69	19.64	19.58	20.5
15MHz	QPSK	25	25	19.71	19.66	19.52	20.5
		50	0	19.66	19.55	19.46	20.5
		1	0	21.51	21.45	21.48	22.5
		1	38	21.55	21.51	21.51	22.5
		1	74	21.34	21.4	21.3	22.5
		36	0	20.57	20.54	20.52	21.5
	16QAM	36	18	20.62	20.56	20.55	21.5
		36	39	20.55	20.54	20.59	21.5
		75	0	20.58	20.52	20.54	21.5
		1	0	21.13	20.85	20.7	21.5
		1	38	21.16	20.87	20.68	21.5
		1	74	21.05	20.76	20.48	21.5
20MHz	QPSK	36	0	19.59	19.46	19.52	20.5
		36	18	19.63	19.49	19.54	20.5
		36	39	19.54	19.49	19.55	20.5
		75	0	19.58	19.49	19.58	20.5
		1	0	21.34	21.32	21.28	22.5
		1	50	21.66	21.73	21.62	22.5
	QPSK	1	99	21.13	21.24	21.15	22.5
		50	0	20.54	20.66	20.41	21.5
		50	25	20.59	20.6	20.49	21.5

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16QAM	50	50	20.42	20.63	20.42	21.5
	100	0	20.54	20.64	20.42	21.5
	1	0	20.96	20.55	20.56	21.5
	1	50	21.28	20.88	20.97	21.5
	1	99	20.77	20.48	20.41	21.5
	50	0	19.61	19.42	19.67	20.5
	50	25	19.63	19.53	19.6	20.5
	50	50	19.46	19.44	19.66	20.5
	100	0	19.58	19.46	19.67	20.5

LTE Band 4				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				19957	20175	20393	
1.4MHz	QPSK	1	0	21.44	21.43	21.27	22.5
		1	2	21.49	21.57	21.35	22.5
		1	5	21.43	21.47	21.26	22.5
		3	0	21.46	21.46	21.38	21.5
		3	2	21.47	21.48	21.43	21.5
		3	3	21.47	21.46	21.38	21.5
	16QAM	6	0	20.49	20.5	20.36	21.5
		1	0	20.42	20.48	20.47	21.5
		1	2	20.52	20.58	20.55	21.5
		1	5	20.44	20.52	20.46	21.5
		3	0	20.34	20.41	20.35	20.5
		3	2	20.37	20.42	20.36	20.5
		3	3	20.38	20.42	20.37	20.5
		6	0	19.53	19.47	19.37	20.5
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				19965	20175	20385	
3MHz	QPSK	1	0	21.56	21.63	21.38	22.5
		1	7	21.66	21.65	21.54	22.5
		1	14	21.48	21.56	21.35	22.5
		8	0	20.56	20.6	20.41	21.5
		8	4	20.58	20.62	20.43	21.5
		8	7	20.54	20.56	20.38	21.5
	16QAM	15	0	20.59	20.58	20.42	21.5
		1	0	21.13	20.62	20.58	21.5
		1	7	21.25	20.78	20.71	21.5
		1	14	21.06	20.58	20.56	21.5
		8	0	19.71	19.67	19.4	20.5
		8	4	19.77	19.69	19.43	20.5
		8	7	19.72	19.59	19.39	20.5
		15	0	19.64	19.62	19.36	20.5
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up

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Bandwidth	Modulation	RB size	RB offset	19975	20175	20375	Tune up
				Channel 20000	Channel 20175	Channel 20350	
5MHz	QPSK	1	0	21.47	21.51	21.37	22.5
		1	13	21.59	21.64	21.45	22.5
		1	24	21.48	21.49	21.3	22.5
		12	0	20.54	20.58	20.45	21.5
		12	6	20.61	20.61	20.47	21.5
		12	13	20.57	20.6	20.39	21.5
		25	0	20.54	20.54	20.41	21.5
	16QAM	1	0	20.34	20.64	20.63	21.5
		1	13	20.42	20.74	20.72	21.5
		1	24	20.32	20.6	20.57	21.5
		12	0	19.49	19.53	19.5	20.5
		12	6	19.58	19.58	19.5	20.5
		12	13	19.59	19.54	19.42	20.5
		25	0	19.59	19.57	19.42	20.5
Bandwidth	Modulation	RB size	RB offset	Channel 20025	Channel 20175	Channel 20325	Tune up
10MHz	QPSK	1	0	21.55	21.56	21.35	22.5
		1	25	21.62	21.67	21.51	22.5
		1	49	21.54	21.46	21.29	22.5
		25	0	20.49	20.64	20.43	21.5
		25	13	20.61	20.52	20.42	21.5
		25	25	20.66	20.56	20.37	21.5
		50	0	20.59	20.61	20.42	21.5
	16QAM	1	0	20.59	20.7	20.96	21.5
		1	25	20.73	20.85	21.11	21.5
		1	49	20.56	20.67	20.88	21.5
		25	0	19.62	19.65	19.51	20.5
		25	13	19.67	19.57	19.49	20.5
		25	25	19.76	19.62	19.45	20.5
		50	0	19.63	19.58	19.46	20.5
15MHz	QPSK	1	0	21.51	21.48	21.4	22.5
		1	38	21.56	21.55	21.36	22.5
		1	74	21.4	21.34	21.18	22.5
		36	0	20.58	20.61	20.44	21.5
		36	18	20.62	20.56	20.46	21.5
		36	39	20.59	20.6	20.43	21.5
		75	0	20.57	20.54	20.43	21.5
	16QAM	1	0	20.9	20.68	20.96	21.5
		1	38	20.97	20.76	20.96	21.5
		1	74	20.82	20.5	20.73	21.5
		36	0	19.51	19.59	19.45	20.5
		36	18	19.61	19.58	19.45	20.5

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Bandwidth	Modulation	36	39	19.57	19.54	19.42	20.5
		75	0	19.53	19.56	19.42	20.5
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20050	20175	20300	
20MHz	QPSK	1	0	21.34	21.32	21.3	22.5
		1	50	21.7	21.71	21.54	22.5
		1	99	21.28	21.18	20.98	22.5
		50	0	20.51	20.63	20.42	21.5
		50	25	20.58	20.57	20.43	21.5
		50	50	20.48	20.53	20.38	21.5
	16QAM	100	0	20.5	20.6	20.4	21.5
		1	0	20.56	20.63	20.88	21.5
		1	50	20.91	20.97	21.09	21.5
		1	99	20.49	20.48	20.59	21.5
		50	0	19.46	19.65	19.42	20.5
		50	25	19.57	19.55	19.43	20.5
		50	50	19.47	19.53	19.38	20.5
		100	0	19.53	19.61	19.47	20.5

LTE Band 5				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20407	20525	20643	
1.4MHz	QPSK	1	0	22.34	22.26	22.14	23
		1	2	22.46	22.36	22.27	23
		1	5	22.35	22.24	22.17	23
		3	0	22.36	22.33	22.25	23
		3	2	22.39	22.35	22.25	23
		3	3	22.37	22.31	22.2	23
	16QAM	6	0	21.38	21.32	21.3	22
		1	0	21.45	21.21	21.08	22
		1	2	21.55	21.31	21.22	22
		1	5	21.45	21.2	21.09	22
		3	0	21.29	21.45	21.37	22
		3	2	21.35	21.52	21.43	22
		3	3	21.32	21.45	21.37	22
		6	0	20.35	20.31	20.2	21
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20415	20525	20635	
3MHz	QPSK	1	0	22.41	22.32	22.19	23
		1	7	22.43	22.43	22.31	23
		1	14	22.35	22.28	22.21	23
		8	0	21.36	21.32	21.23	22



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Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20425	20525	20625	
5MHz	16QAM	8	4	21.4	21.35	21.26	22
		8	7	21.34	21.3	21.22	22
		15	0	21.3	21.3	21.2	22
		1	0	21.35	21.48	21.7	22
		1	7	21.51	21.59	21.79	22
		1	14	21.33	21.39	21.59	22
		8	0	20.37	20.29	20.33	21
		8	4	20.44	20.32	20.38	21
		8	7	20.39	20.24	20.3	21
	15	0	20.33	20.21	20.24	21	
	QPSK	1	0	22.26	22.28	22.14	23
		1	13	22.38	22.33	22.24	23
		1	24	22.25	22.16	22.09	23
		12	0	21.29	21.26	21.31	22
		12	6	21.34	21.32	21.24	22
12		13	21.27	21.29	21.22	22	
25		0	21.26	21.28	21.24	22	
16QAM		1	0	21.31	21.49	21.01	22
		1	13	21.42	21.54	21.06	22
	1	24	21.34	21.36	20.89	22	
	12	0	20.26	20.26	20.29	21	
	12	6	20.33	20.32	20.22	21	
	12	13	20.22	20.29	20.19	21	
25	0	20.28	20.26	20.25	21		
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20450	20525	20600	
10MHz	QPSK	1	0	22.35	22.33	22.33	23
		1	25	22.47	22.47	22.4	23
		1	49	22.26	22.2	22.25	23
		25	0	21.46	21.36	21.35	22
		25	13	21.32	21.34	21.27	22
		25	25	21.3	21.35	21.11	22
	16QAM	50	0	21.38	21.38	21.27	22
		1	0	21.48	21.84	21.25	22
		1	25	21.65	21.93	21.35	22
		1	49	21.41	21.65	21.13	22
		25	0	20.44	20.38	20.45	21
		25	13	20.34	20.37	20.32	21
		25	25	20.32	20.4	20.16	21
		50	0	20.37	20.37	20.28	21

LTE FDD Band 12	Conducted Power(dBm)
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Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up		
				23017	23095	23173			
1.4MHz	QPSK	1	0	22.09	22.11	22.07	23		
		1	2	22.18	22.21	22.22	23		
		1	5	22.09	22.09	22.09	23		
		3	0	22.18	22.16	22.22	23		
		3	2	22.21	22.16	22.21	23		
		3	3	22.17	22.16	22.19	23		
	16QAM	6	0	21.22	21.19	21.23	22		
		1	0	21.27	21.1	21.11	22		
		1	2	21.38	21.19	21.24	22		
		1	5	21.25	21.12	21.13	22		
		3	0	21.18	21.35	21.24	22		
		3	2	21.2	21.39	21.25	22		
		3	3	21.21	21.36	21.21	22		
		6	0	20.23	20.18	20.12	21		
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up		
				23025	23095	23165			
3MHz	QPSK	1	0	22.24	22.17	22.16	23		
		1	7	22.32	22.33	22.29	23		
		1	14	22.23	22.11	22.13	23		
		8	0	21.25	21.2	21.21	22		
		8	4	21.27	21.23	21.24	22		
		8	7	21.21	21.16	21.22	22		
	16QAM	15	0	21.22	21.18	21.19	22		
		1	0	21.26	21.39	21.74	22		
		1	7	21.37	21.45	21.84	22		
		1	14	21.28	21.32	21.67	22		
		8	0	20.28	20.17	20.36	21		
		8	4	20.34	20.19	20.37	21		
		8	7	20.27	20.16	20.37	21		
		15	0	20.26	20.13	20.23	21		
		Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
						23035	23095	23155	
5MHz	QPSK	1	0	22.14	22.13	22.15	23		
		1	13	22.25	22.19	22.19	23		
		1	24	22.11	22.08	22.09	23		
		12	0	21.28	21.17	21.3	22		
		12	6	21.28	21.23	21.25	22		
		12	13	21.22	21.17	21.2	22		
	16QAM	25	0	21.24	21.16	21.26	22		
		1	0	21.25	21.4	21.03	22		
		1	13	21.39	21.46	21.06	22		
		1	24	21.25	21.39	20.97	22		
		12	0	20.23	20.16	20.27	21		

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				23060	23095	23130	
10MHz	QPSK	12	6	20.23	20.24	20.19	21
		12	13	20.17	20.2	20.16	21
		25	0	20.24	20.14	20.25	21
		1	0	22.2	22.21	22.24	23
		1	25	22.31	22.28	22.4	23
		1	49	22.08	22.11	22.18	23
	16QAM	25	0	21.31	21.2	21.38	22
		25	13	21.28	21.24	21.26	22
		25	25	21.34	21.17	21.17	22
		50	0	21.26	21.19	21.37	22
		1	0	21.4	21.81	21.27	22
		1	25	21.53	21.82	21.33	22
		1	49	21.31	21.71	21.17	22
		25	0	20.4	20.24	20.34	21
		25	13	20.3	20.25	20.3	21
		25	25	20.38	20.21	20.23	21
		50	0	20.39	20.22	20.24	21

LTE FDD Band 13				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				23205	23230	23255	
5MHz	QPSK	1	0	21.84	21.86	21.89	23
		1	13	21.95	21.99	22.03	23
		1	24	21.86	21.88	21.91	23
		12	0	20.7	20.88	21.07	22
		12	6	20.93	20.98	21.03	22
		12	13	20.94	20.85	20.84	22
	16QAM	25	0	20.9	20.86	20.98	22
		1	0	21.11	20.74	20.99	22
		1	13	21.21	20.82	21.12	22
		1	24	21.15	20.76	21	22
		12	0	19.75	19.92	20.11	21
		12	6	20.01	20.02	20.08	21
		12	13	20.01	19.92	19.87	21
		25	0	19.91	19.94	20.09	21
		10MHz	QPSK	1	0	NA	21.98
1	25			NA	22.17	NA	23
1	49			NA	21.98	NA	23
25	0			NA	20.73	NA	22
25	13			NA	20.99	NA	22

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16QAM	25	25	NA	20.77	NA	22
	50	0	NA	20.77	NA	22
	1	0	NA	20.97	NA	22
	1	25	NA	21.14	NA	22
	1	49	NA	20.98	NA	22
	25	0	NA	19.87	NA	21
	25	13	NA	20.12	NA	21
	25	25	NA	19.91	NA	21
	50	0	NA	19.84	NA	21

LTE FDD Band 17				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				23755	23790	23825	
5MHz	QPSK	1	0	22.15	22.15	22.15	23
		1	13	22.25	22.23	22.22	23
		1	24	22.07	22.08	22.05	23
		12	0	21.19	21.23	21.29	22
		12	6	21.26	21.25	21.27	22
		12	13	21.25	21.17	21.23	22
	16QAM	25	0	21.24	21.2	21.29	22
		1	0	21.06	21.31	21.39	22
		1	13	21.22	21.39	21.54	22
		1	24	20.99	21.22	21.31	22
		12	0	20.17	20.2	20.29	21
		12	6	20.26	20.22	20.27	21
		12	13	20.25	20.14	20.23	21
		25	0	20.25	20.24	20.25	21
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				23780	23790	23800	
10MHz	QPSK	1	0	22.18	22.21	22.26	23
		1	25	22.3	22.32	22.39	23
		1	49	22.13	22.11	22.14	23
		25	0	21.19	21.25	21.33	22
		25	13	21.26	21.28	21.26	22
		25	25	21.15	21.13	21.2	22
	16QAM	50	0	21.17	21.24	21.31	22
		1	0	21.44	21.8	21.3	22
		1	25	21.52	21.88	21.35	22
		1	49	21.35	21.69	21.16	22
		25	0	20.2	20.28	20.38	21
		25	13	20.28	20.34	20.35	21
		25	25	20.17	20.18	20.24	21
		50	0	20.16	20.21	20.25	21

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Table 9: Conducted Power Of LTE

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8.1.3 Conducted Power Of Wi-Fi and BT

Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Average Power (dBm)	Tune up	Power setting
802.11b	1	2412	1	14.63	16	18
	6	2437		15.68	16	18
	11	2462		14.94	16	18
802.11g	1	2412	6	14.42	15	17
	6	2437		14.93	15	17
	11	2462		13.94	15	17
802.11n HT20 SISO	1	2412	6.5	13.28	14	16
	6	2437		13.83	14	16
	11	2462		12.73	14	16
802.11n HT40 SISO	3	2422	13.5	12.1	13.5	15
	6	2437		13.24	13.5	15
	9	2452		11.88	13.5	15

Band	mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Average Power (dBm)	Tune up	Power setting
5.2GHz	802.11a	36	5180	6	14.2	15	15
		40	5200		13.72	15	15
		48	5240		14.33	15	15
	802.11n HT20	36	5180	6.5	12.48	14	15
		40	5200		13.64	14	15
		48	5240		13.71	14	15
	802.11n HT40	38	5190	13.5	11.34	12	12
		46	5230		11.39	12	12
	802.11ac 20M	36	5180	6.5	13.9	14	15
		40	5200		13.97	14	15
		48	5240		13.58	14	15
	802.11ac 40M	38	5190	13.5	11.31	12	12
		46	5230		11.38	12	12
	802.11ac 80M	42	5210	29.3	11.17	12	12
	5.3GHz	802.11a	52	5260	6	14.38	15
60			5300	14.21		15	15
64			5320	13.58		15	15
802.11n HT20		52	5260	6.5	13.73	14	15
		60	5300		13.51	14	15

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Band	mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Average Power (dBm)	Tune up	Power setting
5.5GHz	802.11a	100	5500	6	12.96	14	15
		116	5580		13.12	14	15
		140	5700		13.85	14	15
	802.11n HT20	100	5500	6.5	12.86	14	15
		116	5580		12.88	14	15
		140	5700		13.67	14	15
	802.11n HT40	102	5510	13.5	10.74	12	12
		110	5550		11.28	12	12
		134	5670		11.64	12	12
	802.11ac 20M	100	5500	6.5	12.85	14	15
		116	5580		12.76	14	15
		140	5700		13.57	14	15
802.11ac 40M	102	5510	13.5	10.63	12	12	
	110	5550		10.77	12	12	
	134	5670		11.24	12	12	
802.11ac 80M	106	5530	29.3	10.66	12	12	
	122	5610		10.81	12	12	
5.8GHz	802.11a	149	5745	6	13.84	14.5	15
		157	5785		14.01	14.5	15
		165	5825		14.14	14.5	15
	802.11n HT20	149	5745	6.5	13.71	14.5	15
		157	5785		13.86	14.5	15
		165	5825		14.12	14.5	15
	802.11n HT40	151	5755	13.5	12.14	13	12
		159	5795		12.27	13	12
	802.11ac 20M	149	5745	6.5	13.82	14.5	15
		157	5785		13.82	14.5	15
		165	5825		13.67	14.5	15
	802.11ac 40M	151	5755	13.5	11.69	13	12



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		159	5795		11.8	13	12
	802.11ac 80M	155	5775	29.3	11.31	13	12

Table 10: Conducted Power Of Wi-Fi

Note:

a) Power must be measured at each transmit antenna port according to the DSSS and OFDM transmission configurations in each standalone and aggregated frequency band.

b) Power measurement is required for the transmission mode configuration with the highest maximum output power specified for production units.

1) When the same highest maximum output power specification applies to multiple transmission modes, the largest channel bandwidth configuration with the lowest order modulation and lowest data rate is measured.

2) When the same highest maximum output power is specified for multiple largest channel bandwidth configurations with the same lowest order modulation or lowest order modulation and lowest data rate, power measurement is required for all equivalent 802.11 configurations with the same maximum output power.

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

BT			Average Conducted Power(dBm)	Tune up (dBm)	Power setting
Modulation	Channel	Frequency (MHz)			
GFSK	0	2402	7.28	7.5	default
	39	2441	4.32	6	default
	78	2480	6.78	7.5	default
π/4DQPSK	0	2402	9.41	9.5	default
	39	2441	8.84	9.5	default
	78	2480	7.4	9	default
8DPSK	0	2402	9.11	9.5	default
	39	2441	8.89	9.5	default
	78	2480	7.49	9	default

BLE_1M			Average Conducted Power(dBm)	Tune up (dBm)	Power setting
Modulation	Channel	Frequency (MHz)			
GFSK	0	2402	-3.55	-2	default
	19	2440	-3.08	-2	default
	39	2480	-4.85	-2	default
BLE_2M			Average Conducted Power(dBm)	Tune up (dBm)	Power setting
Modulation	Channel	Frequency (MHz)			
GFSK	0	2402	-3.43	-2	default
	19	2440	-3.02	-2	default
	39	2480	-4.76	-2	default

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EMC Laboratory

Table 11: Conducted Power Of BT

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8.2 Stand-alone SAR test evaluation for FCC

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity 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	2.45	Head	16	39.8	0	12.5	3	N
		Body-worn	16	39.8	10	6.2	3	N
		hotspot	16	39.8	10	6.2	3	N
Wi-Fi	5	Head	15	31.6	0	14.1	3	N
		Body-worn	15	31.6	10	7.1	3	N
		hotspot	15	31.6	10	7.1	3	N
Bluetooth	2.48	Head	9.5	8.9	0	2.8	3	Y
		Body-worn	9.5	8.9	10	1.4	3	Y
WCDMA Band II	1.909	Head	23	199.5	0	55.1	3	N
		Body-worn	23	199.5	10	27.6	3	N
		hotspot	23	199.5	10	27.6	3	N
WCDMA Band IV	1.750	Head	23	199.5	0	52.8	3	N
		Body-worn	23	199.5	10	26.4	3	N
		hotspot	23	199.5	10	26.4	3	N
WCDMA Band V	0.846	Head	23.5	223.9	0	41.2	3	N
		Body-worn	23.5	223.9	10	20.6	3	N
		hotspot	23.5	223.9	10	20.6	3	N
LTE Band2	1.909	Head	22.5	177.8	0	49.1	3	N
		Body-worn	22.5	177.8	10	24.6	3	N
		hotspot	22.5	177.8	10	24.6	3	N
LTE Band4	1.750	Head	22.5	177.8	0	47.0	3	N
		Body-worn	22.5	177.8	10	23.5	3	N
		hotspot	22.5	177.8	10	23.5	3	N
LTE Band5	0.846	Head	23	199.5	0	36.7	3	N
		Body-worn	23	199.5	10	18.4	3	N
		hotspot	23	199.5	10	18.4	3	N
LTE Band12	0.715	Head	23	199.5	0	33.7	3	N
		Body-worn	23	199.5	10	16.9	3	N
		hotspot	23	199.5	10	16.9	3	N
LTE Band13	0.784	Head	23	199.5	0	35.3	3	N
		Body-worn	23	199.5	10	17.7	3	N
		hotspot	23	199.5	10	17.7	3	N

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ 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

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distance of 5 mm is applied to determine SAR test exclusion.

Note: The customer requires testing the Bluetooth.

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8.3 Measurement of SAR Data

8.3.1 SAR Result Of WCDMA Band II

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp	SAR limit (W/kg)
Head Test data												
Left cheek	RMC	9400/1880	1:1	0.042	0.023	0.09	22.19	23	1.205	0.051	22.3	1.6
Left tilted	RMC	9400/1880	1:1	0.029	0.015	0.17	22.19	23	1.205	0.035	22.3	1.6
Right cheek	RMC	9400/1880	1:1	0.028	0.015	0.1	22.19	23	1.205	0.034	22.3	1.6
Right tilted	RMC	9400/1880	1:1	0.018	0.009	-0.13	22.19	23	1.205	0.022	22.3	1.6
Left cheek	RMC	9262/1852.4	1:1	0.046	0.024	0	22.21	23	1.199	0.055	22.3	1.6
Left cheek	RMC	9538/1907.6	1:1	0.041	0.022	0.03	22.14	23	1.219	0.050	22.3	1.6
Head Test data at the worst case with SIM2												
Left cheek	RMC	9262/1852.4	1:1	0.044	0.022	-0.03	22.21	23	1.199	0.053	22.3	1.6
Hotspot Test data(Separate 10mm)												
Front side	RMC	9400/1880	1:1	0.337	0.169	0.04	22.19	23	1.205	0.406	22.3	1.6
Back side	RMC	9400/1880	1:1	0.238	0.123	0.17	22.19	23	1.205	0.287	22.3	1.6
Left side	RMC	9400/1880	1:1	0.054	0.026	0.04	22.19	23	1.205	0.065	22.3	1.6
Right side	RMC	9400/1880	1:1	0.055	0.028	0.08	22.19	23	1.205	0.066	22.3	1.6
Bottom side	RMC	9400/1880	1:1	0.298	0.154	0.02	22.19	23	1.205	0.359	22.3	1.6
Front side	RMC	9262/1852.4	1:1	0.353	0.176	0.08	22.21	23	1.199	0.423	22.3	1.6
Front side	RMC	9538/1907.6	1:1	0.317	0.161	0.02	22.14	23	1.219	0.386	22.3	1.6
Hotspot Test data at the worst case with SIM2(Separate 10mm)												
Front side	RMC	9262/1852.4	1:1	0.349	0.177	0.02	22.21	23	1.199	0.419	22.3	1.6

Table 12: SAR Result of WCDMA Band II

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph Results refer to Appendix B
- 2) 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).

Variant:

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp	SAR limit (W/kg)
Head Test data at the worst case with sample2												
Left cheek	RMC	9262/1852.4	1:1	0.006	0.003	-0.14	22.21	23	1.199	0.007	22.3	1.6
Hotspot Test data at the worst case with sample2 (Separate 10mm)												
Front side	RMC	9262/1852.4	1:1	0.053	0.03	0.03	22.21	23	1.199	0.064	22.3	1.6

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8.3.2 SAR Result Of WCDMA Band IV

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp	SAR limit (W/kg)
Head Test data												
Left cheek	RMC	1412/1732.4	1:1	0.019	0.009	0.07	22.05	23	1.245	0.024	22.2	1.6
Left tilted	RMC	1412/1732.4	1:1	0.014	0.007	0.12	22.05	23	1.245	0.017	22.2	1.6
Right cheek	RMC	1412/1732.4	1:1	0.009	0.005	-0.05	22.05	23	1.245	0.011	22.2	1.6
Right tilted	RMC	1412/1732.4	1:1	0.005	0.003	-0.17	22.05	23	1.245	0.006	22.2	1.6
Left cheek	RMC	1312/1712.4	1:1	0.017	0.007	0.06	22.08	23	1.236	0.021	22.2	1.6
Left cheek	RMC	1513/1752.6	1:1	0.009	0.002	0	21.9	23	1.288	0.012	22.2	1.6
Head Test data at the worst case with SIM2												
Left cheek	RMC	1412/1732.4	1:1	0.018	0.009	0.17	22.05	23	1.245	0.022	22.2	1.6
Hotspot Test data(Separate 10mm)												
Front side	RMC	1412/1732.4	1:1	0.343	0.177	0.1	22.05	23	1.245	0.427	22.2	1.6
Back side	RMC	1412/1732.4	1:1	0.238	0.132	0.05	22.05	23	1.245	0.296	22.2	1.6
Left side	RMC	1412/1732.4	1:1	0.1	0.048	0.07	22.05	23	1.245	0.124	22.2	1.6
Right side	RMC	1412/1732.4	1:1	0.052	0.025	0.01	22.05	23	1.245	0.065	22.2	1.6
Bottom side	RMC	1412/1732.4	1:1	0.288	0.152	0.04	22.05	23	1.245	0.358	22.2	1.6
Front side	RMC	1312/1712.4	1:1	0.353	0.186	0.02	22.08	23	1.236	0.436	22.2	1.6
Front side	RMC	1513/1752.6	1:1	0.341	0.171	0.02	21.9	23	1.288	0.439	22.2	1.6
Hotspot Test data at the worst case with SIM2(Separate 10mm)												
Front side	RMC	1513/1752.6	1:1	0.335	0.168	0.17	21.9	23	1.288	0.432	22.2	1.6

Table 13: SAR Result of WCDMA Band IV

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph Results refer to Appendix B
- 2) 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).

Variant:

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp	SAR limit (W/kg)
Head Test data at the worst case with sample2												
Left cheek	RMC	1412/1732.4	1:1	0.008	0.005	0	22.05	23	1.245	0.010	22.1	1.6
Hotspot Test data at the worst case with sample2 (Separate 10mm)												
Front side	RMC	1513/1752.6	1:1	0.046	0.027	-0.12	21.9	23	1.288	0.059	22.1	1.6

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8.3.3 SAR Result Of WCDMA Band V

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp	SAR limit (W/kg)
Head Test data with SIM1												
Left cheek	RMC	4182/836.4	1:1	0.054	0.042	0.15	22.93	23.5	1.140	0.062	22.1	1.6
Left tilted	RMC	4182/836.4	1:1	0.017	0.012	0.03	22.93	23.5	1.140	0.019	22.1	1.6
Right cheek	RMC	4182/836.4	1:1	0.028	0.023	0.17	22.93	23.5	1.140	0.032	22.1	1.6
Right tilted	RMC	4182/836.4	1:1	0.009	0.007	-0.01	22.93	23.5	1.140	0.010	22.1	1.6
Left cheek	RMC	4132/826.4	1:1	0.053	0.04	-0.07	23	23.5	1.122	0.059	22.1	1.6
Left cheek	RMC	4233/846.6	1:1	0.05	0.037	0.09	23.07	23.5	1.104	0.055	22.1	1.6
Head Test data at the worst case with SIM2												
Left cheek	RMC	4182/836.4	1:1	0.046	0.035	-0.07	22.93	23.5	1.140	0.052	22.1	1.6
Hotspot Test data with SIM1(Separate 10mm)												
Front side	RMC	4182/836.4	1:1	0.186	0.112	-0.04	22.93	23.5	1.140	0.212	22.1	1.6
Back side	RMC	4182/836.4	1:1	0.149	0.104	-0.08	22.93	23.5	1.140	0.170	22.1	1.6
Left side	RMC	4182/836.4	1:1	0.106	0.074	0.04	22.93	23.5	1.140	0.121	22.1	1.6
Right side	RMC	4182/836.4	1:1	0.032	0.019	0.06	22.93	23.5	1.140	0.036	22.1	1.6
Bottom side	RMC	4182/836.4	1:1	0.134	0.074	-0.01	22.93	23.5	1.140	0.153	22.1	1.6
Front side	RMC	4132/826.4	1:1	0.174	0.105	0.07	23	23.5	1.122	0.195	22.1	1.6
Front side	RMC	4233/846.6	1:1	0.153	0.094	-0.02	23.07	23.5	1.104	0.169	22.1	1.6
Hotspot Test data at the worst case with SIM2(Separate 10mm)												
Front side	RMC	4182/836.4	1:1	0.172	0.101	0.03	22.93	23.5	1.140	0.196	22.1	1.6

Table 14: SAR Result of WCDMA Band V

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B
- 2) 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).

Variant:

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp	SAR limit (W/kg)
Head Test data with SIM1 at the worst case with sample2												
Left cheek	RMC	4182/836.4	1:1	0.002	0.001	-0.11	22.93	23.5	1.140	0.002	22.1	1.6
Hotspot Test data with SIM1 at the worst case with sample2 (Separate 10mm)												
Front side	RMC	4182/836.4	1:1	0.028	0.016	0.16	22.93	23.5	1.140	0.032	22.1	1.6

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8.3.4 SAR Result Of LTE Band 2

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg)
Head Test data												
Left cheek	20M_QPSK 1RB_50	18900/1880	1:1	0.042	0.023	0.08	21.73	22.5	1.194	0.050	22.3	1.6
Left cheek	20M_QPSK 50RB_0	18900/1880	1:1	0.033	0.018	0.03	20.66	21.5	1.213	0.040	22.3	1.6
Left tilted	20M_QPSK 1RB_50	18900/1880	1:1	0.025	0.013	0.17	21.73	22.5	1.194	0.030	22.3	1.6
Left tilted	20M_QPSK 50RB_0	18900/1880	1:1	0.02	0.011	-0.05	20.66	21.5	1.213	0.024	22.3	1.6
Right cheek	20M_QPSK 1RB_50	18900/1880	1:1	0.032	0.016	-0.12	21.73	22.5	1.194	0.038	22.3	1.6
Right cheek	20M_QPSK 50RB_0	18900/1880	1:1	0.025	0.013	0.11	20.66	21.5	1.213	0.030	22.3	1.6
Right tilted	20M_QPSK 1RB_50	18900/1880	1:1	0.015	0.007	0.1	21.73	22.5	1.194	0.018	22.3	1.6
Right tilted	20M_QPSK 50RB_0	18900/1880	1:1	0.012	0.005	-0.06	20.66	21.5	1.213	0.015	22.3	1.6
Left cheek	20M_QPSK 1RB_50	18700/1860	1:1	0.044	0.023	0.02	21.66	22.5	1.213	0.053	22.3	1.6
Left cheek	20M_QPSK 1RB_50	19100/1900	1:1	0.038	0.023	0.01	21.62	22.5	1.225	0.047	22.3	1.6
Head Test data at the worst case with SIM2												
Left cheek	20M_QPSK 1RB_50	18700/1860	1:1	0.041	0.021	-0.08	21.66	22.5	1.213	0.050	22.3	1.6
Hotspot Test data(Separate 10mm)												
Front side	20M_QPSK 1RB_50	18900/1880	1:1	0.261	0.131	-0.03	21.73	22.5	1.194	0.312	22.3	1.6
Front side	20M_QPSK 50RB_0	18900/1880	1:1	0.215	0.103	0.19	20.66	21.5	1.213	0.261	22.3	1.6
Back side	20M_QPSK 1RB_50	18900/1880	1:1	0.194	0.108	0.03	21.73	22.5	1.194	0.232	22.3	1.6
Back side	20M_QPSK 50RB_0	18900/1880	1:1	0.157	0.081	-0.02	20.66	21.5	1.213	0.191	22.3	1.6
Left side	20M_QPSK 1RB_50	18900/1880	1:1	0.045	0.029	-0.15	21.73	22.5	1.194	0.054	22.3	1.6
Left side	20M_QPSK 50RB_0	18900/1880	1:1	0.038	0.024	0.16	20.66	21.5	1.213	0.046	22.3	1.6
Right side	20M_QPSK 1RB_50	18900/1880	1:1	0.052	0.031	0.07	21.73	22.5	1.194	0.062	22.3	1.6
Right side	20M_QPSK 50RB_0	18900/1880	1:1	0.042	0.025	0.08	20.66	21.5	1.213	0.051	22.3	1.6
Bottom side	20M_QPSK 1RB_50	18900/1880	1:1	0.243	0.119	-0.19	21.73	22.5	1.194	0.290	22.3	1.6
Bottom side	20M_QPSK 50RB_0	18900/1880	1:1	0.204	0.101	0.05	20.66	21.5	1.213	0.248	22.3	1.6
Front side	20M_QPSK 1RB_50	18700/1860	1:1	0.27	0.134	0.07	21.66	22.5	1.213	0.328	22.3	1.6
Front side	20M_QPSK 1RB_50	19100/1900	1:1	0.247	0.125	0.01	21.62	22.5	1.225	0.302	22.3	1.6
Hotspot Test data at the worst case with SIM2(Separate 10mm)												
Front side	20M_QPSK 1RB_50	18700/1860	1:1	0.265	0.131	-0.02	21.66	22.5	1.213	0.322	22.3	1.6

Table 15: SAR Result of LTE Band 2

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B
- 2) 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).

Variants:

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg)
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Head Test data at the worst case with sample2

Left cheek	20M_QPSK 1RB_0	19100/1900	1:1	0.015	0.004	0	21.66	22.5	1.213	0.018	22.3	1.6
Hotspot Test data at the worst case with sample2 (Separate 10mm)												
Front side	20M_QPSK 1RB_50	18700/1860	1:1	0.054	0.031	0.11	21.66	22.5	1.213	0.066	22.3	1.6

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8.3.5 SAR Result Of LTE Band 4

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg)
Head Test data												
Left cheek	20M_QPSK 1RB_50	20175/1732.5	1:1	0.062	0.036	0.02	21.71	22.5	1.199	0.074	22.2	1.6
Left cheek	20M_QPSK 50RB_0	20175/1732.5	1:1	0.054	0.031	0.06	20.63	21.5	1.222	0.066	22.2	1.6
Left tilted	20M_QPSK 1RB_50	20175/1732.5	1:1	0.041	0.023	-0.02	21.71	22.5	1.199	0.049	22.2	1.6
Left tilted	20M_QPSK 50RB_0	20175/1732.5	1:1	0.032	0.017	0.08	20.63	21.5	1.222	0.039	22.2	1.6
Right cheek	20M_QPSK 1RB_50	20175/1732.5	1:1	0.049	0.026	0.01	21.71	22.5	1.199	0.059	22.2	1.6
Right cheek	20M_QPSK 50RB_0	20175/1732.5	1:1	0.035	0.018	-0.04	20.63	21.5	1.222	0.043	22.2	1.6
Right tilted	20M_QPSK 1RB_50	20175/1732.5	1:1	0.024	0.013	0.01	21.71	22.5	1.199	0.029	22.2	1.6
Right tilted	20M_QPSK 50RB_0	20175/1732.5	1:1	0.017	0.009	-0.05	20.63	21.5	1.222	0.021	22.2	1.6
Left cheek	20M_QPSK 1RB_50	20050/1720	1:1	0.067	0.039	0	21.7	22.5	1.202	0.081	22.2	1.6
Left cheek	20M_QPSK 1RB_50	20300/1745	1:1	0.057	0.033	0.02	21.54	22.5	1.247	0.071	22.2	1.6
Head Test data at the worst case with SIM2												
Left cheek	20M_QPSK 1RB_50	20050/1720	1:1	0.053	0.029	-0.12	21.7	22.5	1.202	0.064	22.2	1.6
Hotspot Test data(Separate 10mm)												
Front side	20M_QPSK 1RB_50	20175/1732.5	1:1	0.285	0.146	0.05	21.71	22.5	1.199	0.342	22.2	1.6
Front side	20M_QPSK 50RB_0	20175/1732.5	1:1	0.212	0.101	0.08	20.63	21.5	1.222	0.259	22.2	1.6
Back side	20M_QPSK 1RB_50	20175/1732.5	1:1	0.204	0.109	0.03	21.71	22.5	1.199	0.245	22.2	1.6
Back side	20M_QPSK 50RB_0	20175/1732.5	1:1	0.157	0.082	-0.07	20.63	21.5	1.222	0.192	22.2	1.6
Left side	20M_QPSK 1RB_50	20175/1732.5	1:1	0.094	0.05	0.07	21.71	22.5	1.199	0.113	22.2	1.6
Left side	20M_QPSK 50RB_0	20175/1732.5	1:1	0.073	0.039	0.15	20.63	21.5	1.222	0.089	22.2	1.6
Right side	20M_QPSK 1RB_50	20175/1732.5	1:1	0.081	0.042	0.03	21.71	22.5	1.199	0.097	22.2	1.6
Right side	20M_QPSK 50RB_0	20175/1732.5	1:1	0.057	0.031	-0.16	20.63	21.5	1.222	0.070	22.2	1.6
Bottom side	20M_QPSK 1RB_50	20175/1732.5	1:1	0.112	0.059	0.08	21.71	22.5	1.199	0.134	22.2	1.6
Bottom side	20M_QPSK 50RB_0	20175/1732.5	1:1	0.097	0.051	-0.14	20.63	21.5	1.222	0.119	22.2	1.6
Front side	20M_QPSK 1RB_50	20050/1720	1:1	0.287	0.15	0.04	21.7	22.5	1.202	0.345	22.2	1.6
Front side	20M_QPSK 1RB_50	20300/1745	1:1	0.277	0.141	0.02	21.54	22.5	1.247	0.346	22.2	1.6
Hotspot Test data at the worst case with SIM2(Separate 10mm)												
Front side	20M_QPSK 1RB_50	20300/1745	1:1	0.247	0.126	0.06	21.54	22.5	1.247	0.308	22.2	1.6

Table 16: SAR Result of LTE Band 4

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B
- 2) 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).

Variant:

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg)
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Head Test data at the worst case with sample2

Left cheek	20M_QPSK 1RB_50	20050/1720	1:1	0.005	0.003	0.06	21.7	22.5	1.202	0.006	22.2	1.6
Hotspot Test data at the worst case with sample2 (Separate 10mm)												
Front side	20M_QPSK 1RB_50	20300/1745	1:1	0.041	0.023	-0.04	21.7	22.5	1.202	0.049	22.2	1.6

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8.3.6 SAR Result Of LTE Band 5

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg)
Head Test data												
Left cheek	10M_QPSK 1RB_25	20450/829	1:1	0.041	0.031	0.09	22.47	23	1.130	0.046	22.1	1.6
Left cheek	10M_QPSK 25RB_0	20450/829	1:1	0.033	0.025	0.16	21.46	22	1.132	0.037	22.1	1.6
Left tilted	10M_QPSK 1RB_25	20450/829	1:1	0.013	0.009	0.05	22.47	23	1.130	0.015	22.1	1.6
Left tilted	10M_QPSK 25RB_0	20450/829	1:1	0.011	0.007	0.05	21.46	22	1.132	0.012	22.1	1.6
Right cheek	10M_QPSK 1RB_25	20450/829	1:1	0.028	0.022	-0.01	22.47	23	1.130	0.032	22.1	1.6
Right cheek	10M_QPSK 25RB_0	20450/829	1:1	0.022	0.016	0.05	21.46	22	1.132	0.025	22.1	1.6
Right tilted	10M_QPSK 1RB_25	20450/829	1:1	0.007	0.005	-0.02	22.47	23	1.130	0.008	22.1	1.6
Right tilted	10M_QPSK 25RB_0	20450/829	1:1	0.006	0.003	-0.02	21.46	22	1.132	0.007	22.1	1.6
Left cheek	10M_QPSK 1RB_25	20525/836.5	1:1	0.04	0.03	0.06	22.47	23	1.130	0.045	22.1	1.6
Left cheek	10M_QPSK 1RB_25	20600/844	1:1	0.04	0.029	0.08	22.4	23	1.148	0.046	22.1	1.6
Head Test data at the worst case with SIM2												
Left cheek	10M_QPSK 1RB_25	20450/829	1:1	0.04	0.032	0.15	22.47	23	1.130	0.045	22.1	1.6
Hotspot Test data(Separate 10mm)												
Front side	10M_QPSK 1RB_25	20450/829	1:1	0.156	0.09	0.06	22.47	23	1.130	0.176	22.1	1.6
Front side	10M_QPSK 25RB_0	20450/829	1:1	0.135	0.075	-0.04	21.46	22	1.132	0.153	22.1	1.6
Back side	10M_QPSK 1RB_25	20450/829	1:1	0.142	0.099	-0.01	22.47	23	1.130	0.160	22.1	1.6
Back side	10M_QPSK 25RB_0	20450/829	1:1	0.119	0.081	0.05	21.46	22	1.132	0.135	22.1	1.6
Left side	10M_QPSK 1RB_25	20450/829	1:1	0.075	0.039	0.02	22.47	23	1.130	0.085	22.1	1.6
Left side	10M_QPSK 25RB_0	20450/829	1:1	0.061	0.033	-0.08	21.46	22	1.132	0.069	22.1	1.6
Right side	10M_QPSK 1RB_25	20450/829	1:1	0.047	0.025	0.06	22.47	23	1.130	0.053	22.1	1.6
Right side	10M_QPSK 25RB_0	20450/829	1:1	0.038	0.02	-0.11	21.46	22	1.132	0.043	22.1	1.6
Bottom side	10M_QPSK 1RB_25	20450/829	1:1	0.095	0.049	0.07	22.47	23	1.130	0.107	22.1	1.6
Bottom side	10M_QPSK 25RB_0	20450/829	1:1	0.087	0.044	-0.14	21.46	22	1.132	0.099	22.1	1.6
Front side	10M_QPSK 1RB_25	20525/836.5	1:1	0.155	0.09	0.01	22.47	23	1.130	0.175	22.1	1.6
Front side	10M_QPSK 1RB_25	20600/844	1:1	0.157	0.09	0.08	22.4	23	1.148	0.180	22.1	1.6
Hotspot Test data at the worst case with SIM2(Separate 10mm)												
Front side	10M_QPSK 1RB_25	20600/844	1:1	0.144	0.073	0.13	22.4	23	1.148	0.165	22.1	1.6

Table 17: SAR Result of LTE Band 5

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B
- 2) 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).

Variant:

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg)
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Head Test data at the worst case with sample2												
Left cheek	10M_QPSK 1RB_25	20450/829	1:1	0.002	0.001	0	22.47	23	1.130	0.002	22.1	1.6
Hotspot Test data at the worst case with sample2 (Separate 10mm)												
Front side	10M_QPSK 1RB_25	20600/844	1:1	0.006	0.004	0.16	22.4	23	1.148	0.007	22.1	1.6



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8.3.7 SAR Result Of LTE Band 12

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg)
Head Test data												
Left cheek	10M_QPSK 1RB_25	23130/711	1:1	0.067	0.051	0.07	22.40	23	1.148	0.077	22.1	1.6
Left cheek	10M_QPSK 25RB_0	23130/711	1:1	0.053	0.041	0.03	21.38	22	1.153	0.061	22.1	1.6
Left tilted	10M_QPSK 1RB_25	23130/711	1:1	0.027	0.018	-0.04	22.40	23	1.148	0.031	22.1	1.6
Left tilted	10M_QPSK 25RB_0	23130/711	1:1	0.022	0.014	-0.11	21.38	22	1.153	0.025	22.1	1.6
Right cheek	10M_QPSK 1RB_25	23130/711	1:1	0.051	0.043	-0.06	22.40	23	1.148	0.059	22.1	1.6
Right cheek	10M_QPSK 25RB_0	23130/711	1:1	0.04	0.035	0.15	21.38	22	1.153	0.046	22.1	1.6
Right tilted	10M_QPSK 1RB_25	23130/711	1:1	0.019	0.011	0.19	22.40	23	1.148	0.022	22.1	1.6
Right tilted	10M_QPSK 25RB_0	23130/711	1:1	0.015	0.009	0.04	21.38	22	1.153	0.017	22.1	1.6
Left cheek	10M_QPSK 1RB_25	23060/704	1:1	0.062	0.047	-0.06	22.31	23	1.172	0.073	22.1	1.6
Left cheek	10M_QPSK 1RB_25	23095/707.5	1:1	0.068	0.051	0.02	22.28	23	1.180	0.080	22.1	1.6
Head Test data at the worst case with SIM2												
Left cheek	10M_QPSK 1RB_25	23095/707.5	1:1	0.065	0.049	0.17	22.28	23	1.180	0.077	22.1	1.6
Hotspot Test data(Separate 10mm)												
Front side	10M_QPSK 1RB_25	23130/711	1:1	0.145	0.088	0.05	22.4	23	1.148	0.166	22.1	1.6
Front side	10M_QPSK 25RB_0	23130/711	1:1	0.123	0.071	0.13	21.38	22	1.153	0.142	22.1	1.6
Back side	10M_QPSK 1RB_25	23130/711	1:1	0.139	0.105	0.04	22.4	23	1.148	0.160	22.1	1.6
Back side	10M_QPSK 25RB_0	23130/711	1:1	0.114	0.092	0.17	21.38	22	1.153	0.131	22.1	1.6
Left side	10M_QPSK 1RB_25	23130/711	1:1	0.057	0.034	-0.01	22.4	23	1.148	0.065	22.1	1.6
Left side	10M_QPSK 25RB_0	23130/711	1:1	0.041	0.025	0.06	21.38	22	1.153	0.047	22.1	1.6
Right side	10M_QPSK 1RB_25	23130/711	1:1	0.03	0.017	0.01	22.4	23	1.148	0.034	22.1	1.6
Right side	10M_QPSK 25RB_0	23130/711	1:1	0.022	0.014	-0.15	21.38	22	1.153	0.025	22.1	1.6
Bottom side	10M_QPSK 1RB_25	23060/704	1:1	0.095	0.051	0.06	22.4	23	1.148	0.109	22.1	1.6
Bottom side	10M_QPSK 25RB_0	23095/707.5	1:1	0.084	0.046	-0.13	21.38	22	1.153	0.097	22.1	1.6
Front side	10M_QPSK 1RB_25	23060/704	1:1	0.134	0.083	-0.01	22.31	23	1.172	0.157	22.1	1.6
Front side	10M_QPSK 1RB_25	23095/707.5	1:1	0.145	0.088	0.07	22.28	23	1.180	0.171	22.1	1.6
Hotspot Test data at the worst case with SIM2(Separate 10mm)												
Front side	10M_QPSK 1RB_25	23095/707.5	1:1	0.142	0.085	0.12	22.28	23	1.180	0.168	22.1	1.6

Table 18: SAR Result of LTE Band 12

Note:

- 3) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B
- 4) 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).

Variant:

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg)
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Head Test data at the worst case with sample2

Left cheek	10M_QPSK 1RB_25	23095/707.5	1:1	0.005	0.002	0.11	22.28	23	1.180	0.006	22.1	1.6
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Hotspot Test data at the worst case with sample2 (Separate 10mm)

Front side	10M_QPSK 1RB_25	23095/707.5	1:1	0.002	0.002	-0.19	22.28	23	1.180	0.002	22.1	1.6
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8.3.8 SAR Result Of LTE Band 13

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg)
Head Test data												
Left cheek	10M_QPSK 1RB_25	23230/782	1:1	0.045	0.035	-0.03	22.17	23	1.211	0.054	22.1	1.6
Left cheek	10M_QPSK 25RB_13	23230/782	1:1	0.037	0.027	0.07	20.99	22	1.262	0.047	22.1	1.6
Left tilted	10M_QPSK 1RB_25	23230/782	1:1	0.018	0.012	0.16	22.17	23	1.211	0.022	22.1	1.6
Left tilted	10M_QPSK 25RB_13	23230/782	1:1	0.014	0.01	0.05	20.99	22	1.262	0.018	22.1	1.6
Right cheek	10M_QPSK 1RB_25	23230/782	1:1	0.029	0.024	0.02	22.17	23	1.211	0.035	22.1	1.6
Right cheek	10M_QPSK 25RB_13	23230/782	1:1	0.024	0.021	0.05	20.99	23	1.589	0.038	22.1	1.6
Right tilted	10M_QPSK 1RB_25	23230/782	1:1	0.009	0.006	0.03	22.17	23	1.211	0.011	22.1	1.6
Right tilted	10M_QPSK 25RB_13	23230/782	1:1	0.006	0.005	0.13	20.99	23	1.589	0.010	22.1	1.6
Head Test data at the worst case with SIM2												
Left cheek	10M_QPSK 1RB_25	23230/782	1:1	0.044	0.032	0.17	22.17	23	1.211	0.053	22.1	1.6
Hotspot Test data(Separate 10mm)												
Front side	10M_QPSK 1RB_25	23230/782	1:1	0.13	0.075	0.09	22.17	23	1.211	0.157	22.1	1.6
Front side	10M_QPSK 25RB_13	23230/782	1:1	0.105	0.058	0.07	20.99	22	1.262	0.132	22.1	1.6
Back side	10M_QPSK 1RB_25	23230/782	1:1	0.117	0.083	0.01	22.17	23	1.211	0.142	22.1	1.6
Back side	10M_QPSK 25RB_13	23230/782	1:1	0.092	0.066	0.04	20.99	22	1.262	0.116	22.1	1.6
Left side	10M_QPSK 1RB_25	23230/782	1:1	0.085	0.059	0.13	22.17	23	1.211	0.103	22.1	1.6
Left side	10M_QPSK 25RB_13	23230/782	1:1	0.065	0.044	-0.02	20.99	22	1.262	0.082	22.1	1.6
Right side	10M_QPSK 1RB_25	23230/782	1:1	0.021	0.015	-0.1	22.17	23	1.211	0.025	22.1	1.6
Right side	10M_QPSK 25RB_13	23230/782	1:1	0.018	0.011	0.01	20.99	22	1.262	0.023	22.1	1.6
Bottom side	10M_QPSK 1RB_25	23230/782	1:1	0.101	0.064	-0.18	22.17	23	1.211	0.122	22.1	1.6
Bottom side	10M_QPSK 25RB_13	23230/782	1:1	0.085	0.052	-0.03	20.99	22	1.262	0.107	22.1	1.6
Hotspot Test data at the worst case with SIM2(Separate 10mm)												
Front side	10M_QPSK 1RB_25	23230/782	1:1	0.125	0.071	0.15	22.17	23	1.211	0.151	22.1	1.6

Table 19: SAR Result of LTE Band 13

Note:

- 5) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B
- 6) 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).

Variant:

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg)
Head Test data at the worst case with sample2												
Left cheek	10M_QPSK 1RB_25	23230/782	1:1	0.004	0.001	0.1	22.17	23	1.211	0.005	22.1	1.6
Hotspot Test data at the worst case with sample2 (Separate 10mm)												
Front side	10M_QPSK 1RB_25	23230/782	1:1	0.002	0.001	0.04	22.17	23	1.211	0.002	22.1	1.6

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8.3.9 SAR Result Of 2.4GHz Wi-Fi

Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.
Head Test data												
Left cheek	802.11b	6/2437	99.05%	1.01	0.365	0.173	0.01	15.68	16.00	1.076	0.397	22.0
Left tilted	802.11b	6/2437	99.05%	1.01	0.375	0.170	-0.12	15.68	16.00	1.076	0.408	22.0
Right cheek	802.11b	6/2437	99.05%	1.01	0.411	0.206	0.03	15.68	16.00	1.076	0.447	22.0
Right tilted	802.11b	6/2437	99.05%	1.01	0.398	0.192	0.15	15.68	16.00	1.076	0.433	22.0
Right cheek	802.11b	1/2412	99.05%	1.01	0.313	0.191	-0.02	14.63	16.00	1.371	0.433	22.0
Right cheek	802.11b	11/2462	99.05%	1.01	0.334	0.188	0.00	14.94	16.00	1.276	0.431	22.0
Body worn Test data (Separate 10mm)												
Front side	802.11b	6/2437	99.05%	1.01	0.115	0.058	0.05	15.68	16.00	1.076	0.125	22.0
Back side	802.11b	6/2437	99.05%	1.01	0.098	0.053	-0.06	15.68	16.00	1.076	0.107	22.0
Front side	802.11b	1/2412	99.05%	1.01	0.091	0.047	0.05	14.63	16.00	1.371	0.126	22.0
Front side	802.11b	11/2462	99.05%	1.01	0.097	0.045	0.04	14.94	16.00	1.276	0.125	22.0
Hotspot Test data (Separate 10mm)												
Front side	802.11b	6/2437	99.05%	1.01	0.115	0.058	0.05	15.68	16.00	1.076	0.125	22.0
Back side	802.11b	6/2437	99.05%	1.01	0.098	0.053	-0.06	15.68	16.00	1.076	0.107	22.0
Left side	802.11b	6/2437	99.05%	1.01	0.064	0.030	0.04	15.68	16.00	1.076	0.070	22.0
Right side	802.11b	6/2437	99.05%	1.01	0.027	0.013	0.00	15.68	16.00	1.076	0.029	22.0
Top side	802.11b	6/2437	99.05%	1.01	0.125	0.063	-0.09	15.68	16.00	1.076	0.136	22.0
Top side	802.11b	1/2412	99.05%	1.01	0.123	0.063	-0.02	14.63	16.00	1.371	0.170	22.0
Top side	802.11b	11/2462	99.05%	1.01	0.122	0.062	-0.05	14.94	16.00	1.276	0.157	22.0

Table 20: SAR Result Of 2.4GHz Wi-Fi
Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B
- 2) 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). Per Kdb248227 D01, When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel.
- 3) Each channel was tested at the lowest data rate.
- 4) Per KDB248227 D01, for Body SAR test of Wi-Fi 2.4G, SAR is measured for 2.4 GHz 802.11b DSSS using the initial test position procedure. The highest reported SAR for DSSS is adjusted by the ratio of OFDM 802.11g/n to DSSS specified maximum output power and the adjusted SAR is < 1.2 W/kg, so SAR for 802.11g/n is not required.

Variant:

Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.
Head Test data at the worst case with sample2												
Right cheek	802.11b	6/2437	99.05%	1.01	0.113	0.058	0.01	15.68	16.00	1.076	0.123	22.0
Body worn Test data at the worst case with sample2 (Separate 10mm)												
Front side	802.11b	1/2412	99.05%	1.01	0.009	0.005	0.01	14.63	16.00	1.371	0.012	22.0
Hotspot Test data at the worst case with sample2 (Separate 10mm)												

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Top side	802.11b	1/2412	89.53%	1.117	0.011	0.005	-0.03	14.63	16.00	1.371	0.017	22.0
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8.3.10 SAR Result Of 5GHz Wi-Fi

Test position	Test mode	Test Ch./Freq.	Duty Cycle %	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg)
Head Test data U-NII-2A													
Left cheek	802.11a	52/5260	95.85	1.043	0.242	0.084	-0.04	14.38	15	1.153	0.291	22.2	1.6
Left tilted	802.11a	52/5260	95.85	1.043	0.227	0.099	-0.03	14.38	15	1.153	0.273	22.2	1.6
Right cheek	802.11a	52/5260	95.85	1.043	0.449	0.116	0.08	14.38	15	1.153	0.540	22.2	1.6
Right tilted	802.11a	52/5260	95.85	1.043	0.345	0.104	0.13	14.38	15	1.153	0.415	22.2	1.6
Right cheek	802.11a	60/5300	95.85	1.043	0.474	0.121	0.08	14.21	15	1.199	0.593	22.2	1.6
Right cheek	802.11a	64/5320	95.85	1.043	0.439	0.111	0.18	13.58	15	1.387	0.635	22.2	1.6
Head Test data U-NII-2C													
Left cheek	802.11a	140/5700	95.85	1.043	0.205	0.071	0.03	13.85	14	1.035	0.221	22.2	1.6
Left tilted	802.11a	140/5700	95.85	1.043	0.189	0.062	0.17	13.85	14	1.035	0.204	22.2	1.6
Right cheek	802.11a	140/5700	95.85	1.043	0.393	0.102	0.01	13.85	14	1.035	0.424	22.2	1.6
Right tilted	802.11a	140/5700	95.85	1.043	0.308	0.089	-0.15	13.85	14	1.035	0.333	22.2	1.6
Right cheek	802.11a	100/5500	95.85	1.043	0.385	0.1	0.16	12.96	14	1.271	0.510	22.2	1.6
Right cheek	802.11a	116/5580	95.85	1.043	0.472	0.125	0.06	13.12	14	1.225	0.603	22.2	1.6
Head Test data U-NII-3													
Left cheek	802.11a	165/5825	95.85	1.043	0.089	0.024	-0.13	14.14	14.5	1.086	0.101	22.2	1.6
Left tilted	802.11a	165/5825	95.85	1.043	0.084	0.023	-0.15	14.14	14.5	1.086	0.095	22.2	1.6
Right cheek	802.11a	165/5825	95.85	1.043	0.179	0.044	0.01	14.14	14.5	1.086	0.203	22.2	1.6
Right tilted	802.11a	165/5825	95.85	1.043	0.155	0.039	-0.18	14.14	14.5	1.086	0.176	22.2	1.6
Right cheek	802.11a	149/5745	95.85	1.043	0.233	0.058	0.06	13.84	14.5	1.164	0.283	22.2	1.6
Right cheek	802.11a	157/5785	95.85	1.043	0.186	0.045	0.02	14.01	14.5	1.119	0.217	22.2	1.6
Body worn Test data U-NII-2A(Separate 10mm)													
Front side	802.11a	52/5260	95.85	1.043	0.054	0.017	-0.15	14.38	15	1.153	0.065	22.2	1.6
Back side	802.11a	52/5260	95.85	1.043	0.43	0.144	0.12	14.38	15	1.153	0.517	22.2	1.6
Back side	802.11a	60/5300	95.85	1.043	0.494	0.163	0.04	14.21	15	1.199	0.618	22.2	1.6
Back side	802.11a	64/5320	95.85	1.043	0.468	0.156	-0.08	13.58	15	1.387	0.677	22.2	1.6
Body worn Test data U-NII-2C(Separate 10mm)													
Front side	802.11a	140/5700	95.85	1.043	0.061	0.019	0.15	13.85	14	1.035	0.066	22.2	1.6
Back side	802.11a	140/5700	95.85	1.043	0.393	0.13	-0.06	13.85	14	1.035	0.424	22.2	1.6
Back side	802.11a	100/5500	95.85	1.043	0.413	0.139	0.07	12.96	14	1.271	0.547	22.2	1.6
Back side	802.11a	116/5580	95.85	1.043	0.419	0.138	0.04	13.12	14	1.225	0.535	22.2	1.6
Hotspot Test data U-NII-1(Separate 10mm)													
Front side	802.11a	48/5240	95.85	1.043	0.07	0.023	0	14.33	15	1.167	0.085	22.2	1.6

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Back side	802.11a	48/5240	95.85	1.043	0.414	0.136	0.06	14.33	15	1.167	0.504	22.2	1.6
Left side	802.11a	48/5240	95.85	1.043	0.071	0.027	0.05	14.33	15	1.167	0.086	22.2	1.6
Right side	802.11a	48/5240	95.85	1.043	0.13	0.048	0.17	14.33	15	1.167	0.158	22.2	1.6
Top side	802.11a	48/5240	95.85	1.043	0.138	0.051	-0.02	14.33	15	1.167	0.168	22.2	1.6
Back side	802.11a	36/5180	95.85	1.043	0.275	0.091	-0.05	14.2	15	1.202	0.345	22.2	1.6
Back side	802.11a	40/5200	95.85	1.043	0.31	0.103	0.14	13.72	15	1.343	0.434	22.2	1.6
Hotspot Test data U-NII-3(Separate 10mm)													
Front side	802.11a	165/5825	95.85	1.043	0.018	0.006	0	14.14	14.5	1.086	0.020	22.2	1.6
Back side	802.11a	165/5825	95.85	1.043	0.236	0.074	-0.03	14.14	14.5	1.086	0.267	22.2	1.6
Left side	802.11a	165/5825	95.85	1.043	0.058	0.022	0.06	14.14	14.5	1.086	0.066	22.2	1.6
Right side	802.11a	165/5825	95.85	1.043	0.029	0.005	0.17	14.14	14.5	1.086	0.033	22.2	1.6
Top side	802.11a	165/5825	95.85	1.043	0.033	0.011	0.05	14.14	14.5	1.086	0.037	22.2	1.6
Back side	802.11a	149/5745	95.85	1.043	0.324	0.1	0.08	13.84	14.5	1.164	0.393	22.2	1.6
Back side	802.11a	157/5785	95.85	1.043	0.282	0.085	-0.03	14.01	14.5	1.119	0.329	22.2	1.6

Table 21: SAR Result Of 5GHz Wi-Fi

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B
- 2) 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). Per Kdb248227 D01, When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel.
- 3) Each channel was tested at the lowest data rate.
- 4) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. As the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration.
- 5) 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.

Variant:

Test position	Test mode	Test Ch./Freq.	Duty Cycle %	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg)
Head Test data U-NII-2A at the worst case with sample2													
Right cheek	802.11a	64/5320	95.85	1.043	0.047	0.015	0.02	13.58	15	1.387	0.068	22.2	1.6
Body worn Test data U-NII-2A at the worst case with sample2 (Separate 10mm)													
Back side	802.11a	64/5320	95.85	1.043	0.041	0.013	0.15	13.58	15	1.387	0.059	22.2	1.6
Hotspot Test data U-NII-1 at the worst case with sample2 (Separate 10mm)													
Back side	802.11a	48/5240	95.85	1.043	0.057	0.017	-0.12	14.33	15	1.167	0.069	22.2	1.6

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8.3.11 SAR Result Of Bluetooth

Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-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	0/2402	70.89%	1.411	0.066	0.032	0.04	9.41	9.50	1.021	0.095	22.0
Left tilted	802.11b	0/2402	70.89%	1.411	0.068	0.031	0.13	9.41	9.50	1.021	0.098	22.0
Right cheek	802.11b	0/2402	70.89%	1.411	0.075	0.038	0.05	9.41	9.50	1.021	0.108	22.0
Right tilted	802.11b	0/2402	70.89%	1.411	0.071	0.033	0.07	9.41	9.50	1.021	0.102	22.0
Right cheek	802.11b	39/2441	70.89%	1.411	0.065	0.033	-0.16	8.84	9.50	1.164	0.107	22.0
Right cheek	802.11b	78/2480	70.89%	1.411	0.049	0.025	-0.05	7.40	9.00	1.445	0.100	22.0
Body worn Test data (Separate 10mm)												
Front side	802.11b	0/2402	70.89%	1.411	0.025	0.013	0.03	9.41	9.50	1.021	0.036	22.0
Back side	802.11b	0/2402	70.89%	1.411	0.019	0.010	-0.08	9.41	9.50	1.021	0.027	22.0
Front side	802.11b	39/2441	70.89%	1.411	0.021	0.011	-0.10	8.84	9.50	1.164	0.034	22.0
Front side	802.11b	78/2480	70.89%	1.411	0.018	0.008	-0.07	7.40	9.00	1.445	0.037	22.0

Table 22: SAR Result Of Bluetooth

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B
- 2) 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).

Variant:

Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp.
Head Test data at the worst case with sample2												
Right cheek	802.11b	0/2402	70.89%	1.411	0.009	0.004	-0.02	9.41	9.5	1.021	0.013	22
Body worn Test data at the worst case with sample2 (Separate 10mm)												
Front side	802.11b	0/2402	70.89%	1.411	0.025	0.013	0.03	9.41	9.5	1.021	0.036	22

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8.4 Multiple Transmitter Evaluation

8.4.1 Simultaneous SAR SAR test evaluation

Simultaneous Transmission

NO.	Simultaneous Transmission Configuration	Head	Body worn	Hotspot
1	WCDMA(Voice) + WiFi	Yes	Yes	No
2	WCDMA(Voice) + BT	Yes	Yes	No
3	WCDMA(Data) + WiFi	No	Yes	Yes
4	WCDMA(Data) + BT	No	Yes	No
5	LTE(Data) + WiFi	Yes	Yes	Yes
6	LTE(Data) + BT	Yes	Yes	No
7	BT+WIFI	No	No	No

Note:

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



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1) Simultaneous Transmission SAR Summation Scenario for head

WWAN Band	Exposure position	①MAX. WWAN SAR(W/kg)	②MAX. WLAN 2.4GHz SAR(W/kg)	③MAX. WLAN 5GHz SAR(W/kg)	④MAX. BT SAR(W/kg)	Summed SAR ①+②	Summed SAR ①+③	Summed SAR ①+④	Case NO.
WCDMA Band II	Left cheek	0.055	0.397	0.291	0.095	0.452	0.346	0.150	No
	Left Tilted	0.035	0.408	0.273	0.098	0.443	0.308	0.133	No
	Right cheek	0.034	0.447	0.635	0.108	0.481	0.669	0.142	No
	Right Tilted	0.022	0.433	0.415	0.102	0.455	0.437	0.124	No
WCDMA Band IV	Left cheek	0.024	0.397	0.291	0.095	0.421	0.315	0.119	No
	Left Tilted	0.017	0.408	0.273	0.098	0.425	0.290	0.115	No
	Right cheek	0.011	0.447	0.635	0.108	0.458	0.646	0.119	No
	Right Tilted	0.006	0.433	0.415	0.102	0.439	0.421	0.108	No
WCDMA Band V	Left cheek	0.062	0.397	0.291	0.095	0.459	0.353	0.157	No
	Left Tilted	0.019	0.408	0.273	0.098	0.427	0.292	0.117	No
	Right cheek	0.032	0.447	0.635	0.108	0.479	0.667	0.140	No
	Right Tilted	0.010	0.433	0.415	0.102	0.443	0.425	0.112	No
LTE Band 2	Left cheek	0.053	0.397	0.291	0.095	0.450	0.344	0.148	No
	Left Tilted	0.030	0.408	0.273	0.098	0.438	0.303	0.128	No
	Right cheek	0.038	0.447	0.635	0.108	0.485	0.673	0.146	No
	Right Tilted	0.018	0.433	0.415	0.102	0.451	0.433	0.120	No
LTE Band 4	Left cheek	0.081	0.397	0.291	0.095	0.478	0.372	0.176	No
	Left Tilted	0.049	0.408	0.273	0.098	0.457	0.322	0.147	No
	Right cheek	0.059	0.447	0.635	0.108	0.506	0.694	0.167	No
	Right Tilted	0.029	0.433	0.415	0.102	0.462	0.444	0.131	No
LTE Band 5	Left cheek	0.046	0.397	0.291	0.095	0.443	0.337	0.141	No
	Left Tilted	0.015	0.408	0.273	0.098	0.423	0.288	0.113	No
	Right cheek	0.032	0.447	0.635	0.108	0.479	0.667	0.140	No
	Right Tilted	0.008	0.433	0.415	0.102	0.441	0.423	0.110	No
LTE Band 12	Left cheek	0.080	0.397	0.291	0.095	0.477	0.371	0.175	No
	Left Tilted	0.031	0.408	0.273	0.098	0.439	0.304	0.129	No
	Right cheek	0.059	0.447	0.635	0.108	0.506	0.694	0.167	No
	Right Tilted	0.022	0.433	0.415	0.102	0.455	0.437	0.124	No
LTE Band 13	Left cheek	0.054	0.397	0.291	0.095	0.451	0.345	0.149	No

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Left Tilted	0.022	0.408	0.273	0.098	0.430	0.295	0.120	No
Right cheek	0.038	0.447	0.635	0.108	0.485	0.673	0.146	No
Right Tilted	0.011	0.433	0.415	0.102	0.444	0.426	0.113	No



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2) Simultaneous Transmission SAR Summation Scenario for body worn

WWAN Band	Exposure position	①MAX. WWAN SAR(W/kg)	②MAX. WLAN 2.4GHz Ant 1 SAR(W/kg)	③MAX. WLAN 5GHz SAR(W/kg)	④MAX. BT SAR(W/kg)	Summed SAR ①+②	Summed SAR ①+③	Summed SAR ①+④	Case NO.
WCDMA Band II	Front	0.423	0.125	0.066	0.036	0.548	0.489	0.459	No
	Back	0.287	0.107	0.677	0.027	0.394	0.964	0.314	No
WCDMA Band IV	Front	0.439	0.125	0.066	0.036	0.564	0.505	0.475	No
	Back	0.296	0.107	0.677	0.027	0.403	0.973	0.323	No
WCDMA Band V	Front	0.212	0.125	0.066	0.036	0.337	0.278	0.248	No
	Back	0.170	0.107	0.677	0.027	0.277	0.847	0.197	No
LTE Band 2	Front	0.328	0.125	0.066	0.036	0.453	0.394	0.364	No
	Back	0.232	0.107	0.677	0.027	0.339	0.909	0.259	No
LTE Band 4	Front	0.346	0.125	0.066	0.036	0.471	0.412	0.382	No
	Back	0.245	0.107	0.677	0.027	0.352	0.922	0.272	No
LTE Band 5	Front	0.180	0.125	0.066	0.036	0.305	0.246	0.216	No
	Back	0.160	0.107	0.677	0.027	0.267	0.837	0.187	No
LTE Band 12	Front	0.171	0.125	0.066	0.036	0.296	0.237	0.207	No
	Back	0.160	0.107	0.677	0.027	0.267	0.837	0.187	No
LTE Band 13	Front	0.157	0.125	0.066	0.036	0.282	0.223	0.193	No
	Back	0.142	0.107	0.677	0.027	0.249	0.819	0.169	No



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3) Simultaneous Transmission SAR Summation Scenario for hotspot

WWAN Band	Exposure position	①MAX. WWAN SAR(W/kg)	②MAX. WLAN 2.4GHz SAR(W/kg)	③MAX. WLAN 5GHz SAR(W/kg)	Summed SAR ①+②	Summed SAR ①+③	Case NO.
WCDMA Band II	Front	0.423	0.125	0.085	0.548	0.508	No
	Back	0.287	0.107	0.504	0.394	0.791	No
	Left	0.065	0.070	0.086	0.135	0.151	No
	Right	0.066	0.029	0.158	0.095	0.224	No
	Top	0.000	0.170	0.168	0.170	0.168	No
	Bottom	0.359	0.000	0.000	0.359	0.359	No
WCDMA Band IV	Front	0.439	0.125	0.085	0.564	0.524	No
	Back	0.296	0.107	0.504	0.403	0.800	No
	Left	0.124	0.070	0.086	0.194	0.210	No
	Right	0.065	0.029	0.158	0.094	0.223	No
	Top	0.000	0.170	0.168	0.170	0.168	No
	Bottom	0.358	0.000	0.000	0.358	0.358	No
WCDMA Band V	Front	0.212	0.125	0.085	0.337	0.297	No
	Back	0.170	0.107	0.504	0.277	0.674	No
	Left	0.121	0.070	0.086	0.191	0.207	No
	Right	0.036	0.029	0.158	0.065	0.194	No
	Top	0.000	0.170	0.168	0.170	0.168	No
	Bottom	0.153	0.000	0.000	0.153	0.153	No
LTE Band 2	Front	0.328	0.125	0.085	0.453	0.413	No
	Back	0.232	0.107	0.504	0.339	0.736	No
	Left	0.054	0.070	0.086	0.124	0.140	No
	Right	0.062	0.029	0.158	0.091	0.220	No
	Top	0.000	0.170	0.168	0.170	0.168	No
	Bottom	0.290	0.000	0.000	0.290	0.290	No
LTE Band 4	Front	0.346	0.125	0.085	0.471	0.431	No
	Back	0.245	0.107	0.504	0.352	0.749	No
	Left	0.113	0.070	0.086	0.183	0.199	No
	Right	0.097	0.029	0.158	0.126	0.255	No
	Top	0.000	0.170	0.168	0.170	0.168	No
	Bottom	0.134	0.000	0.000	0.134	0.134	No
LTE Band 5	Front	0.180	0.125	0.085	0.305	0.265	No
	Back	0.160	0.107	0.504	0.267	0.664	No
	Left	0.085	0.070	0.086	0.155	0.171	No
	Right	0.053	0.029	0.158	0.082	0.211	No
	Top	0.000	0.170	0.168	0.170	0.168	No
	Bottom	0.107	0.000	0.000	0.107	0.107	No

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LTE Band 12	Front	0.171	0.125	0.085	0.296	0.256	No
	Back	0.160	0.107	0.504	0.267	0.664	No
	Left	0.065	0.070	0.086	0.135	0.151	No
	Right	0.034	0.029	0.158	0.063	0.192	No
	Top	0.000	0.170	0.168	0.170	0.168	No
	Bottom	0.109	0.000	0.000	0.109	0.109	No
LTE Band 13	Front	0.157	0.125	0.085	0.282	0.242	No
	Back	0.142	0.107	0.504	0.249	0.646	No
	Left	0.103	0.070	0.086	0.173	0.189	No
	Right	0.025	0.029	0.158	0.054	0.183	No
	Top	0.000	0.170	0.168	0.170	0.168	No
	Bottom	0.122	0.000	0.000	0.122	0.122	No



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9 Equipment list

Test Platform	SPEAG DASY5 Professional					
Location	SGS-CCS Standards Technical Services Co., Ltd. Kunshan Branch					
Description	SAR Test System (Frequency range 300MHz-6GHz)					
Software Reference	DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)					
Hardware Reference						
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Due date of calibration	
<input checked="" type="checkbox"/> P C	HP	Core(m)3.16G	CZCO48171H	N/A	N/A	
<input checked="" type="checkbox"/> Signal Generator	Agilent	E5182A	MY50142015	2020/09/25	2021/09/24	
<input checked="" type="checkbox"/> S-Parameter Network Analyzer	Agilent	E5071B	MY42301382	2020/02/24	2021/02/23	
<input checked="" type="checkbox"/> DAK-3.5 probe	SPEAG	DAK-3.5	1102	N/A	N/A	
<input checked="" type="checkbox"/> Power meter	Anritsu	ML2495A	1445010	2021/04/15	2022/04/14	
<input checked="" type="checkbox"/> Power sensor	Anritsu	MA2411B	1339220	2021/04/15	2022/04/14	
<input checked="" type="checkbox"/> Wireless Communication Test Set	R&S	CMU200	109525	2020/10/19	2021/10/18	
<input checked="" type="checkbox"/> universal Radio communication tester	R&S	CMW500	159275	2020/10/19	2021/10/18	
<input checked="" type="checkbox"/> DAE	SPEAG	DAE4	1245	2021/05/19	2022/05/18	
<input checked="" type="checkbox"/> E-field PROBE	SPEAG	EX3DV4	3798	2021/05/31	2022/05/30	
<input checked="" type="checkbox"/> Dipole	SPEAG	D750V3	1188	2019/03/07	2022/03/06	
<input checked="" type="checkbox"/> Dipole	SPEAG	D835V2	4d114	2019/06/11	2022/06/10	
<input checked="" type="checkbox"/> Dipole	SPEAG	D1800V2	2d170	2019/06/11	2022/06/10	
<input checked="" type="checkbox"/> Dipole	SPEAG	D1900V2	5d136	2019/06/11	2022/06/10	
<input checked="" type="checkbox"/> Dipole	SPEAG	D2450V2	817	2019/06/10	2022/06/09	
<input checked="" type="checkbox"/> Dipole	SPEAG	D5GHzV2	1095	2019/06/14	2022/06/13	
<input checked="" type="checkbox"/> Electro Thermometer	DTM	DTM3000	3030	2020/10/24	2021/10/23	
<input checked="" type="checkbox"/> Amplifier	Mini-circuits	ZVE-8G	110405	N/A	N/A	
<input checked="" type="checkbox"/> Amplifier	Mini-circuits	ZHL-42	QA1331003	N/A	N/A	
<input checked="" type="checkbox"/> 3db ATTENUATOR	MINI	MCL BW-S3W5	0533	N/A	N/A	
<input checked="" type="checkbox"/> DUMMY PROBE	SPEAG	DP_2	SPDP2001AA	N/A	N/A	
<input checked="" type="checkbox"/> Dual Directional Coupler	Woken	20W couple	DOM2BHW1A1	N/A	N/A	
<input checked="" type="checkbox"/> SAM PHANTOM (ELI4 v4.0)	SPEAG	QDOVA001BB	1102	N/A	N/A	
<input checked="" type="checkbox"/> Twin SAM Phantom	SPEAG	QD000P40CD	1609	N/A	N/A	

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<input checked="" type="checkbox"/>	ROBOT	SPEAG	TX60	F10/5E6AA1/A101	N/A	N/A
<input checked="" type="checkbox"/>	ROBOT KRC	SPEAG	CS8C	F10/5E6AA1/C101	N/A	N/A
<input checked="" type="checkbox"/>	LIQUID CALIBRATION KIT	ANTENNESSA	41/05 OCP9	00425167	N/A	N/A

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

All measurement facilities used to collect the measurement data are located at

No.10, Weiye Rd., Innovation Park, Eco & Tec. Development Part, Kunshan City, Jiangsu Province, China.

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10 Calibration certificate

Please see the Appendix C

11 Photographs

Please see the Appendix D



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Appendix A: Detailed System Check Results

The plots are showing as followings.

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Test Laboratory: Compliance Certification Services Inc.

System Performance Check-Head 750MHz

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1188

Communication System: UID 0, CW (0); Frequency: 750 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.879 \text{ S/m}$; $\epsilon_r = 42.786$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.78, 9.78, 9.78); Calibrated: 2021/05/31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASYS2, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body/d=15mm, Pin=250 mW, dist=3.0mm (EX-Probe)/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (measured) = 2.61 W/kg

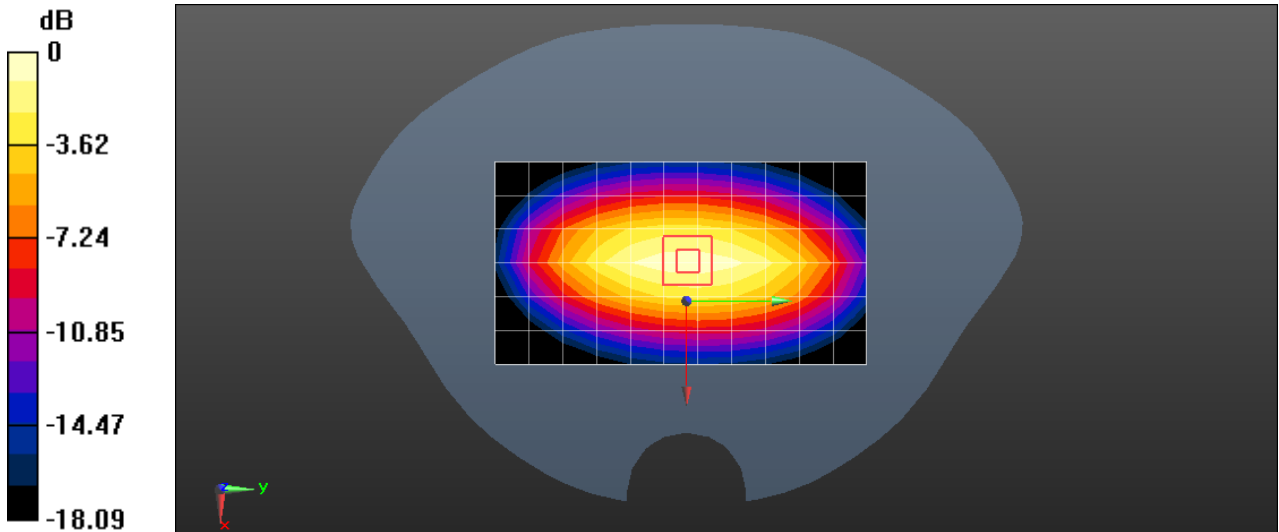
Body/d=15mm, Pin=250 mW, dist=3.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 58.73 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 3.26 W/kg

SAR(1 g) = 2.22 W/kg; SAR(10 g) = 1.37 W/kg

Maximum value of SAR (measured) = 2.79 W/kg



0 dB = 2.79 W/kg = 4.46 dBW/kg



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Test Laboratory: Compliance Certification Services Inc.

System Performance Check Head 835MHz

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d114

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.904 \text{ S/m}$; $\epsilon_r = 42.233$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.52, 9.52, 9.52); Calibrated: 2021/05/31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body/d=15mm, Pin=250 mW, dist=3.0mm (EX-Probe)/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (measured) = 2.35 W/kg

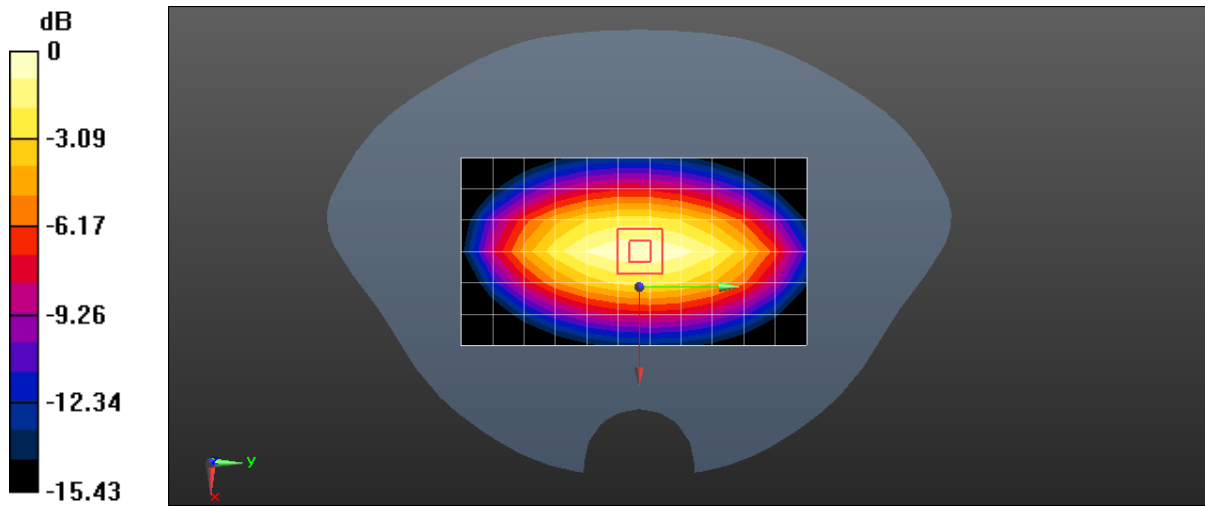
Body/d=15mm, Pin=250 mW, dist=3.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 52.33 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 2.80 W/kg

SAR(1 g) = 2.37 W/kg; SAR(10 g) = 1.53 W/kg

Maximum value of SAR (measured) = 3.37 W/kg



0 dB = 3.37 W/kg = 5.28 dBW/kg



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Test Laboratory: Compliance Certification Services Inc.

System Performance Check-Head 1800MHz

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: 2d170

Communication System: UID 10000, CW; Frequency: 1800 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1800 \text{ MHz}$; $\sigma = 1.384 \text{ S/m}$; $\epsilon_r = 40.258$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

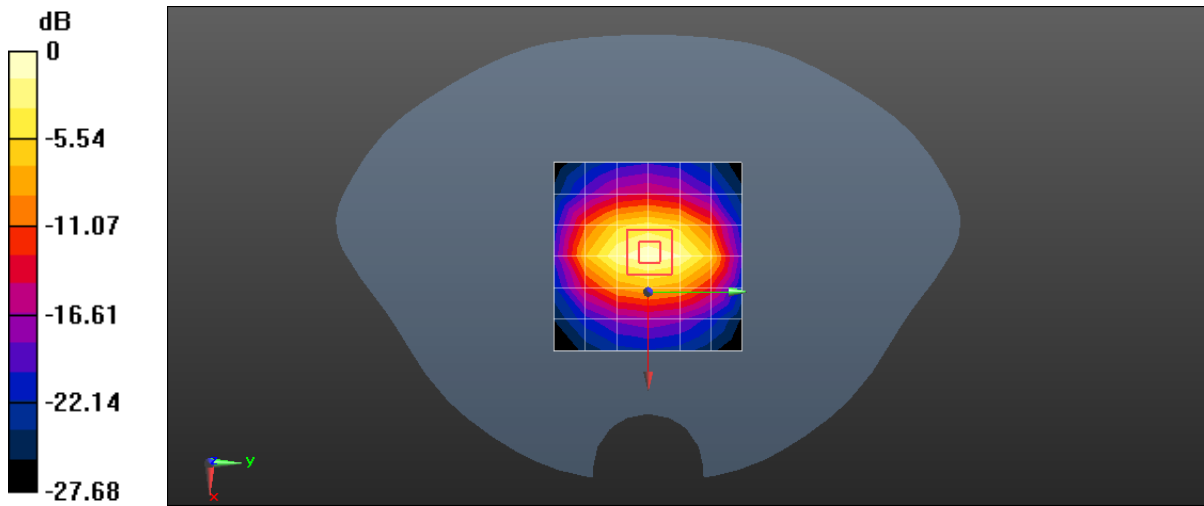
DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(8.22, 8.22, 8.22); Calibrated: 2021/05/31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body/d=10mm, Pin=250 mW, dist=3.0mm (EX-Probe) (23.6 dBm)/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (measured) = 12.5 W/kg

Body/d=10mm, Pin=250 mW, dist=3.0mm (EX-Probe) (23.6 dBm)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 95.91 V/m; Power Drift = 0.50 dB
 Peak SAR (extrapolated) = 17.9 W/kg
SAR(1 g) = 9.52 W/kg; SAR(10 g) = 4.92 W/kg
 Maximum value of SAR (measured) = 13.8 W/kg



0 dB = 13.8 W/kg = 11.40 dBW/kg



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Test Laboratory: Compliance Certification Services Inc.

System Performance Check-Head 1900MHz

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d136

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.373 \text{ S/m}$; $\epsilon_r = 40.58$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.89, 7.89, 7.89); Calibrated: 2021/05/31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body/Pin=250 mW, dist=10mm (EX-Probe)/Area Scan (7x8x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (measured) = 12.8 W/kg

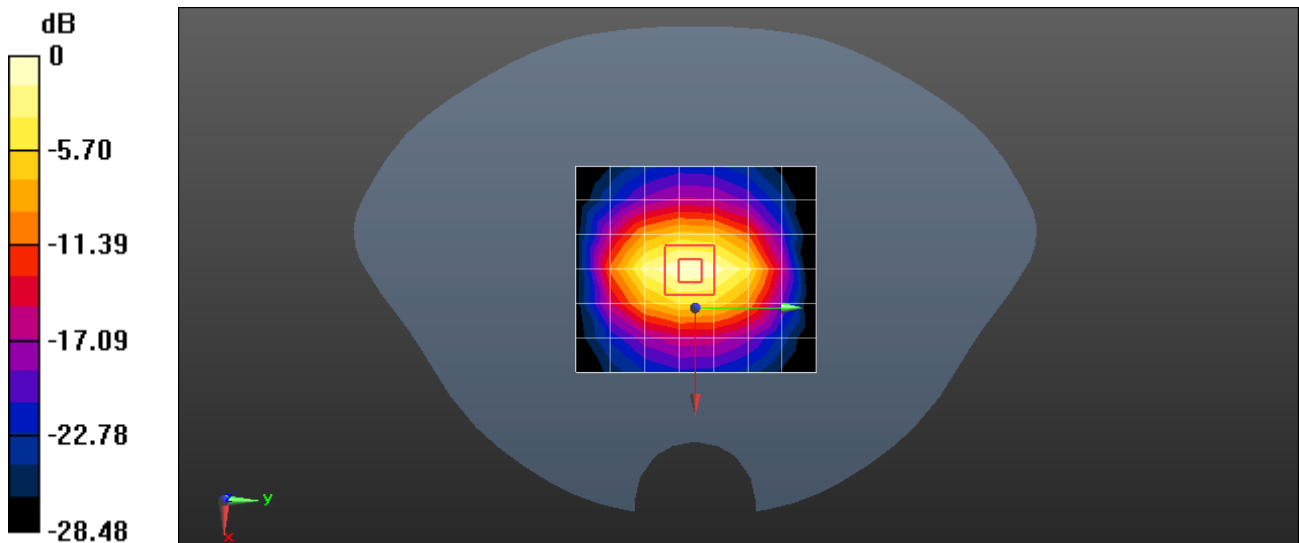
Body/Pin=250 mW, dist=10mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 99.88 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 17.2 W/kg

SAR(1 g) = 9.78 W/kg; SAR(10 g) = 5.13 W/kg

Maximum value of SAR (measured) = 13.2 W/kg



0 dB = 13.2 W/kg = 11.21 dBW/kg

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Test Laboratory: Compliance Certification Services Inc.

SystemPerformanceCheck-Head 2450MHz

DUT: Dipole 2450 MHz D2450V2; Type: D2450V2; Serial: 817

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2450 \text{ MHz}$; $\sigma = 1.809 \text{ S/m}$; $\epsilon_r = 38.753$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.33, 7.33, 7.33); Calibrated: 2021/05/31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body/Pin=250 mW, dist=10mm (EX-Probe)/Area Scan (9x10x1): Measurement grid: dx=12mm, dy=12mm
 Maximum value of SAR (measured) = 17.4 W/kg

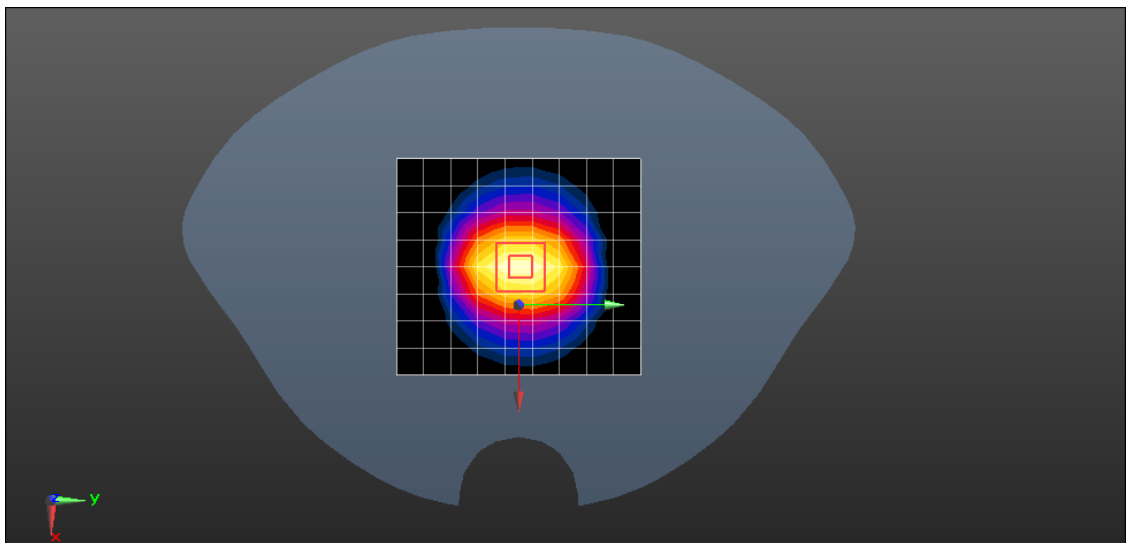
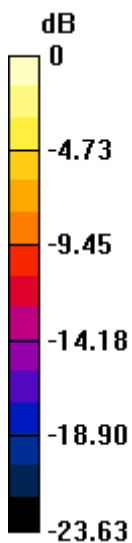
Body/Pin=250 mW, dist=10mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 103.8 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 26.1 W/kg

SAR(1 g) = 13.0 W/kg; SAR(10 g) = 5.94 W/kg

Maximum value of SAR (measured) = 18.8 W/kg



0 dB = 18.8 W/kg = 12.74 dBW/kg



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Test Laboratory: Compliance Certification Services Inc.

SystemPerformanceCheck-Head 5250MHz

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: 1095

Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
 Medium parameters used: $f = 5250 \text{ MHz}$; $\sigma = 4.655 \text{ S/m}$; $\epsilon_r = 36.108$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(4.85, 4.85, 4.85); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body/d=10mm, Pin=100mW, f=5250 MHz/Area Scan (9x10x1): Measurement grid: dx=10mm, dy=10mm
 Maximum value of SAR (measured) = 15.5 W/kg

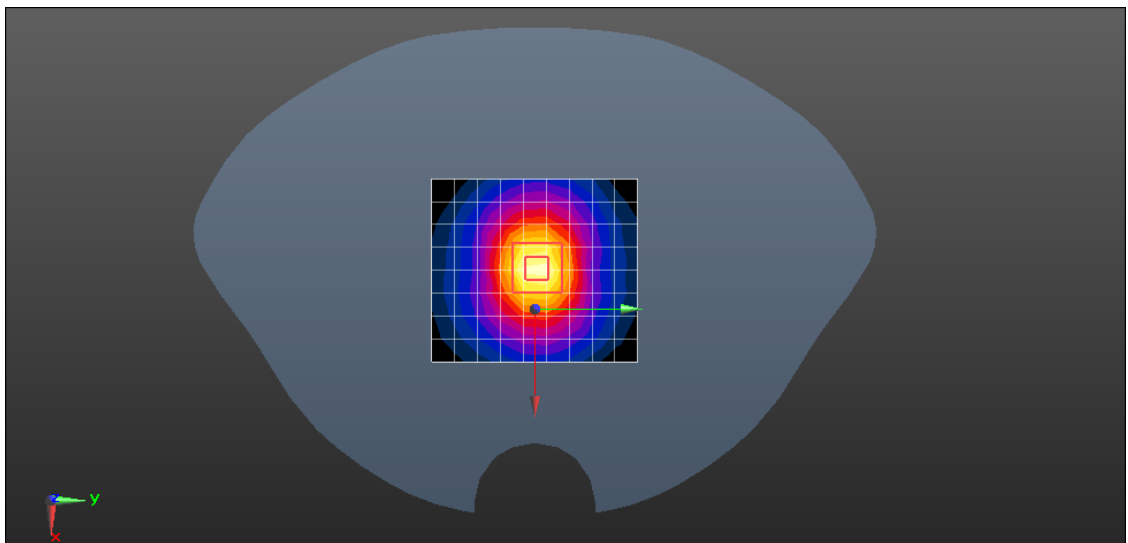
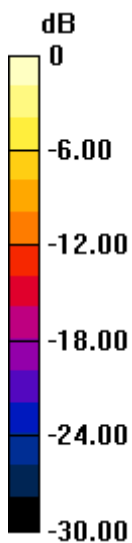
Body/d=10mm, Pin=100mW, f=5250 MHz/Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (8x8x7)/Cube 0:
 Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 71.51 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 31.5 W/kg

SAR(1 g) = 7.91 W/kg; SAR(10 g) = 2.27 W/kg

Maximum value of SAR (measured) = 18.6 W/kg



0 dB = 18.6 W/kg = 12.70 dBW/kg



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Appendix B: Detailed Test Results

The plots of worse case are showing as followings.

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Compliance Certification Services (Kunshan) Inc.
EMC Laboratory

Test Laboratory: Compliance Certification Services Inc.

WCDMA Band II RMC12.2Kbps Left cheek Ch9262

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

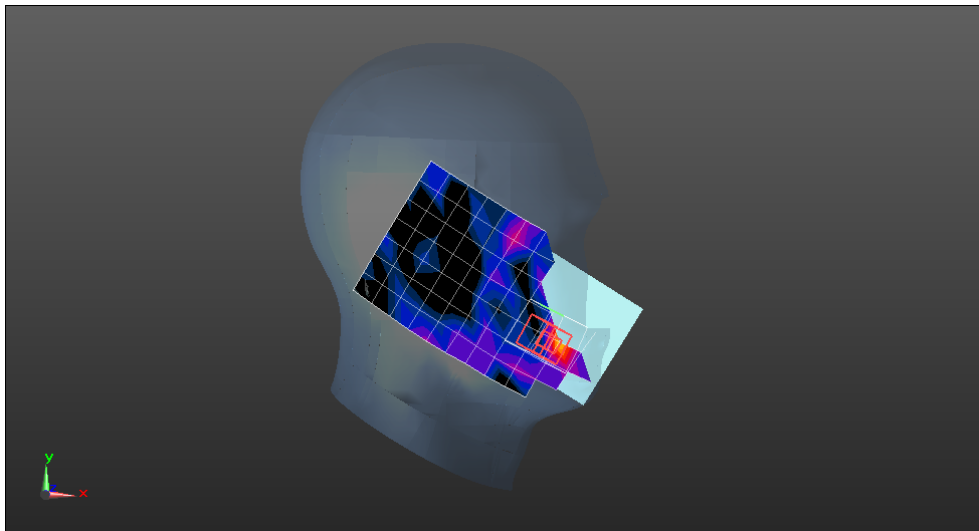
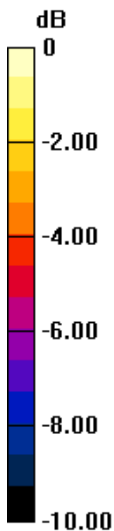
Communication System: UID 0, WCDMA / UMTS (0); Frequency: 1852.4 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 1852.4 \text{ MHz}$; $\sigma = 1.354 \text{ S/m}$; $\epsilon_r = 40.731$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Left Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.89, 7.89, 7.89); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASYS2, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (measured) = 0.0229 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 1.914 V/m; Power Drift = -0.14 dB
 Peak SAR (extrapolated) = 0.0580 W/kg
SAR(1 g) = 0.006 W/kg; SAR(10 g) = 0.003 W/kg
 Maximum value of SAR (measured) = 0.0383 W/kg



0 dB = 0.0383 W/kg = -14.17 dBW/kg



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Test Laboratory: Compliance Certification Services Inc.

WCDMA Band II RMC12.2Kbps Front side 10mm Ch9262

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

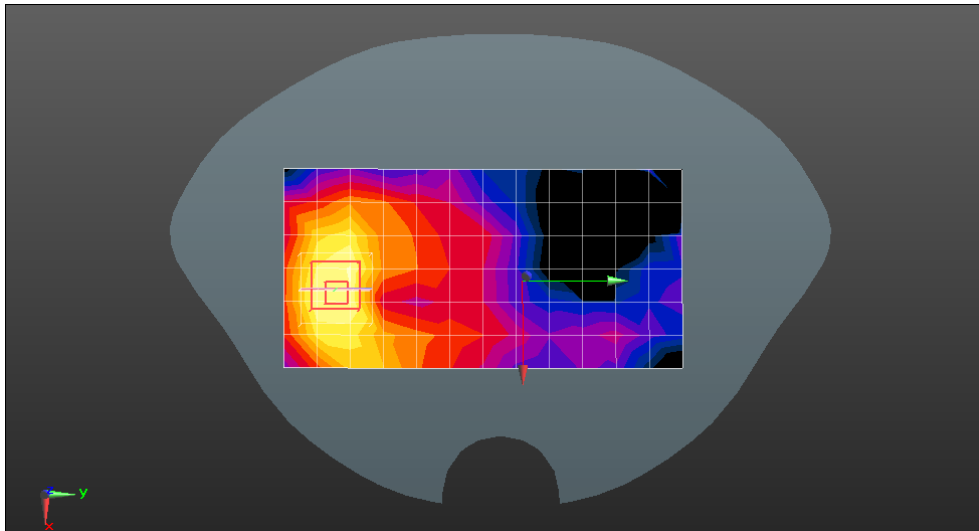
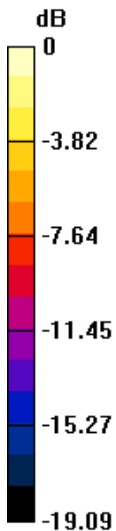
Communication System: UID 0, WCDMA / UMTS (0); Frequency: 1852.4 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 1852.4 \text{ MHz}$; $\sigma = 1.354 \text{ S/m}$; $\epsilon_r = 40.731$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.89, 7.89, 7.89); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASYS2, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (measured) = 0.0593 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 1.723 V/m; Power Drift = 0.03 dB
 Peak SAR (extrapolated) = 0.0940 W/kg
SAR(1 g) = 0.053 W/kg; SAR(10 g) = 0.030 W/kg
 Maximum value of SAR (measured) = 0.0767 W/kg



0 dB = 0.0767 W/kg = -11.15 dBW/kg

Date: 2021/09/27



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Test Laboratory: Compliance Certification Services Inc.

WCDMA Band IV RMC12.2Kbps Left cheek Ch1412

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

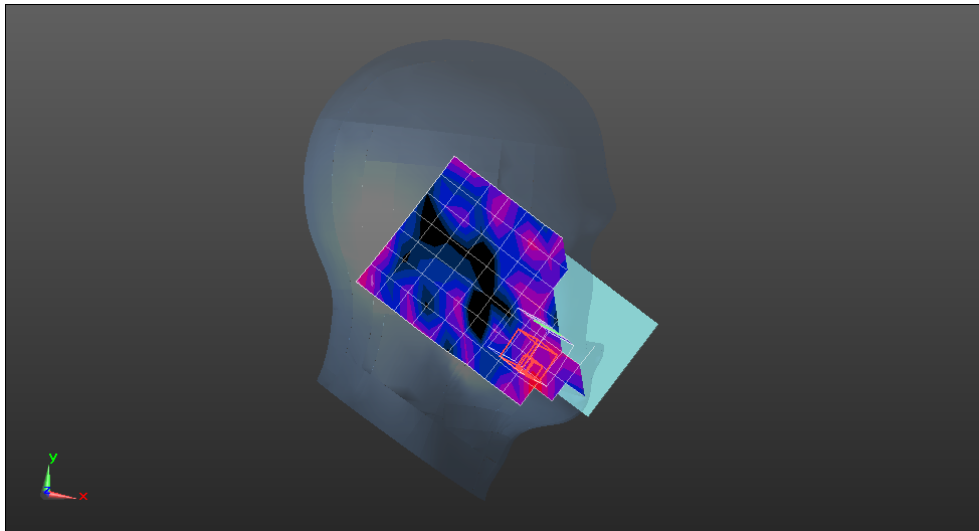
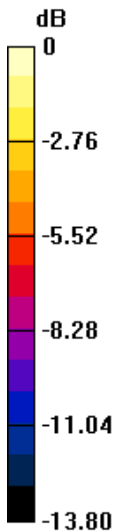
Communication System: UID 0, WCDMA / UMTS (0); Frequency: 1732.4 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 1732.4 \text{ MHz}$; $\sigma = 1.322 \text{ S/m}$; $\epsilon_r = 40.596$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Left Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(8.22, 8.22, 8.22); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASYS2, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (measured) = 0.0320 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 1.665 V/m; Power Drift = -0.00 dB
 Peak SAR (extrapolated) = 0.0680 W/kg
SAR(1 g) = 0.008 W/kg; SAR(10 g) = 0.005 W/kg
 Maximum value of SAR (measured) = 0.0499 W/kg



0 dB = 0.0499 W/kg = -13.02 dBW/kg

Date: 2021/09/27



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Test Laboratory: Compliance Certification Services Inc.

WCDMA Band IV RMC12.2Kbps Front side 10mm Ch1513

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, WCDMA / UMTS (0); Frequency: 1752.6 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1753 \text{ MHz}$; $\sigma = 1.349 \text{ S/m}$; $\epsilon_r = 40.484$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section
 Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(8.22, 8.22, 8.22); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASYS52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.0587 W/kg

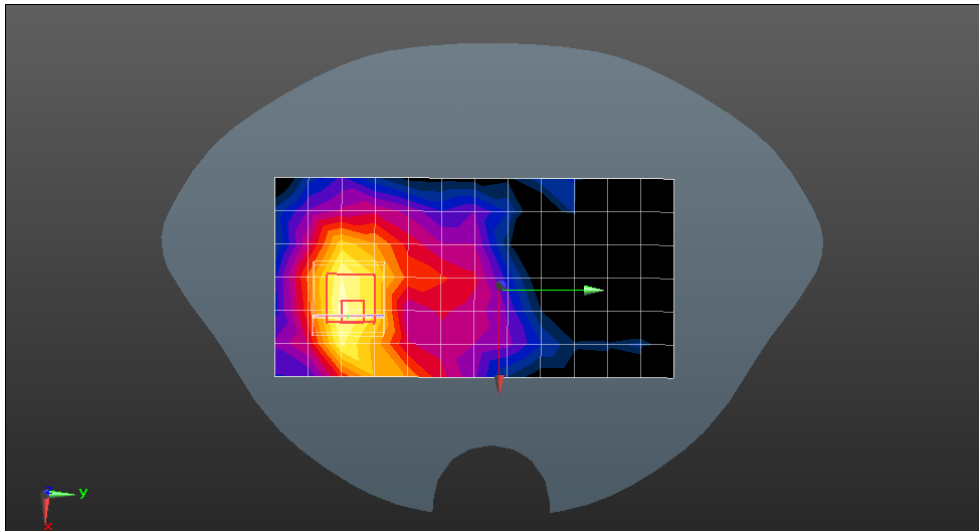
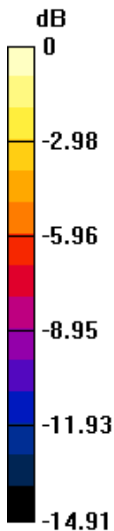
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.919 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 0.0830 W/kg

SAR(1 g) = 0.046 W/kg; SAR(10 g) = 0.027 W/kg

Maximum value of SAR (measured) = 0.0647 W/kg



0 dB = 0.0647 W/kg = -11.89 dBW/kg

Date: 2021/09/26



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Test Laboratory: Compliance Certification Services Inc.

WCDMA Band V RMC12.2Kbps Left cheek Ch4182

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

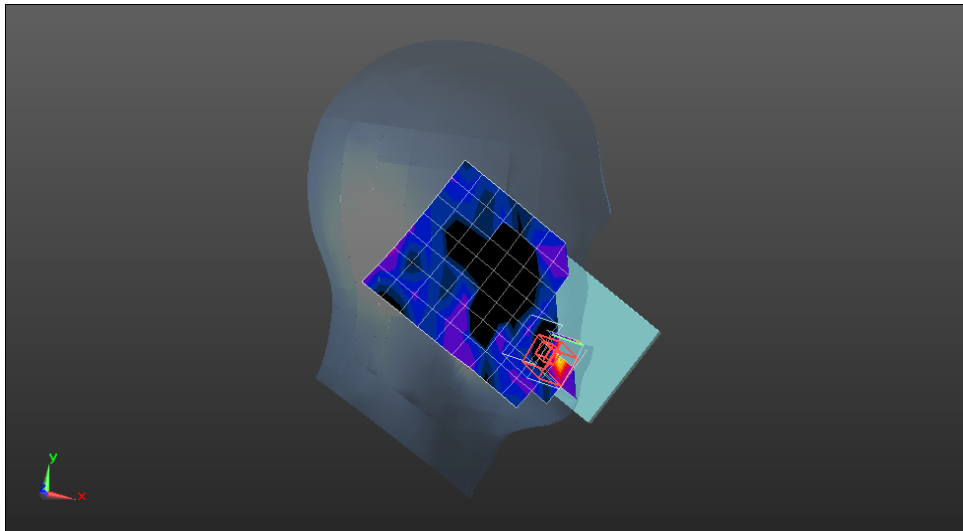
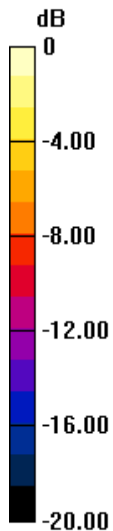
Communication System: UID 0, WCDMA / UMTS (0); Frequency: 836.4 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 836.4 \text{ MHz}$; $\sigma = 0.909 \text{ S/m}$; $\epsilon_r = 42.366$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Left Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.52, 9.52, 9.52); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (measured) = 0.0239 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 1.049 V/m; Power Drift = -0.11 dB
 Peak SAR (extrapolated) = 0.0670 W/kg
SAR(1 g) = 0.002 W/kg; SAR(10 g) = 0.001 W/kg
 Maximum value of SAR (measured) = 0.0374 W/kg



0 dB = 0.0374 W/kg = -14.27 dBW/kg



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Test Laboratory: Compliance Certification Services Inc.

WCDMA Band V RMC12.2Kbps Front side 10mm Ch4182

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, WCDMA / UMTS (0); Frequency: 836.4 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 836.4$ MHz; $\sigma = 0.909$ S/m; $\epsilon_r = 42.366$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.52, 9.52, 9.52); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

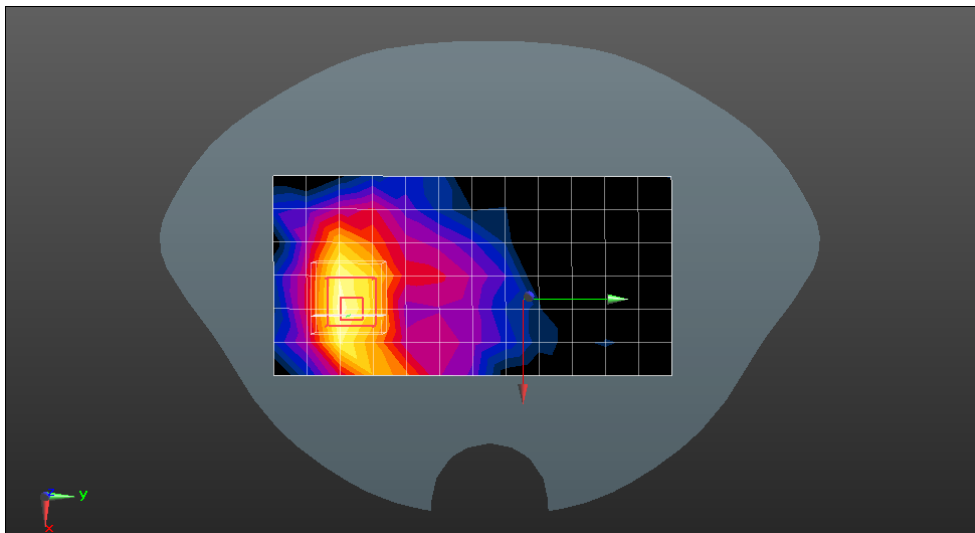
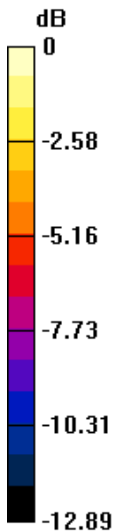
Maximum value of SAR (measured) = 0.0366 W/kg

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

Reference Value = 2.439 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.0500 W/kg

SAR(1 g) = 0.028 W/kg; SAR(10 g) = 0.016 W/kg; Maximum value of SAR (measured) = 0.0396 W/kg



0 dB = 0.0396 W/kg = -14.02 dBW/kg



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Test Laboratory: Compliance Certification Services Inc.

LTE Band 2 20M QPSK 1RB50 Left cheek Ch18700

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, FDD_LTE (0); Frequency: 1860 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1860 \text{ MHz}$; $\sigma = 1.36 \text{ S/m}$; $\epsilon_r = 40.764$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Left Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.89, 7.89, 7.89); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.0328 W/kg

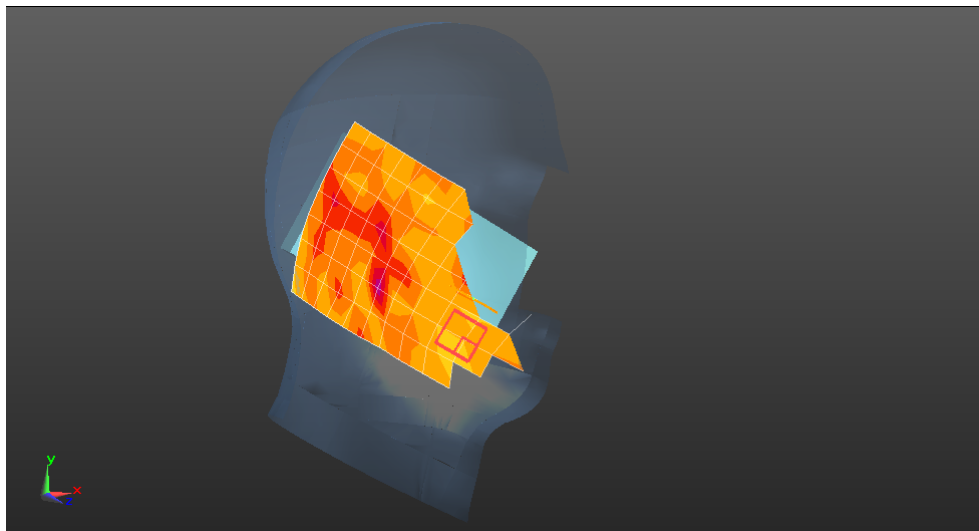
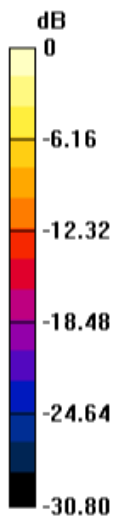
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.119 W/kg

SAR(1 g) = 0.015 W/kg; SAR(10 g) = 0.004 W/kg

Maximum value of SAR (measured) = 0.0763 W/kg



0 dB = 0.0763 W/kg = -11.17 dBW/kg

Date: 2021/09/27



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Test Laboratory: Compliance Certification Services Inc.

LTE Band 2 20M QPSK 1RB50 Front side Ch18700 10mm

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, FDD_LTE (0); Frequency: 1860 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1860$ MHz; $\sigma = 1.36$ S/m; $\epsilon_r = 40.764$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.89, 7.89, 7.89); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.0607 W/kg

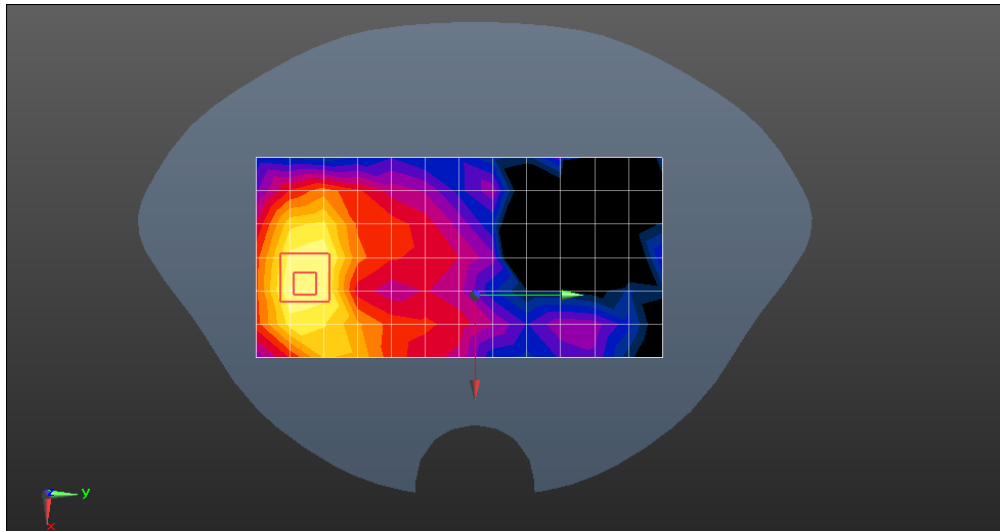
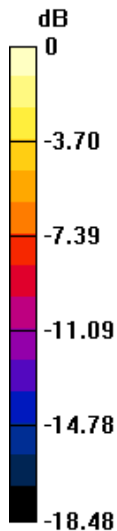
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.847 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.0950 W/kg

SAR(1 g) = 0.054 W/kg; SAR(10 g) = 0.031 W/kg

Maximum value of SAR (measured) = 0.0791 W/kg



0 dB = 0.0791 W/kg = -11.02 dBW/kg

Date: 2021/09/27



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Test Laboratory: Compliance Certification Services Inc.

LTE Band 4 20M QPSK 1RB50 Left cheek Ch20050

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, FDD_LTE (0); Frequency: 1720 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1720 \text{ MHz}$; $\sigma = 1.316 \text{ S/m}$; $\epsilon_r = 40.633$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Left Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(8.22, 8.22, 8.22); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.0339 W/kg

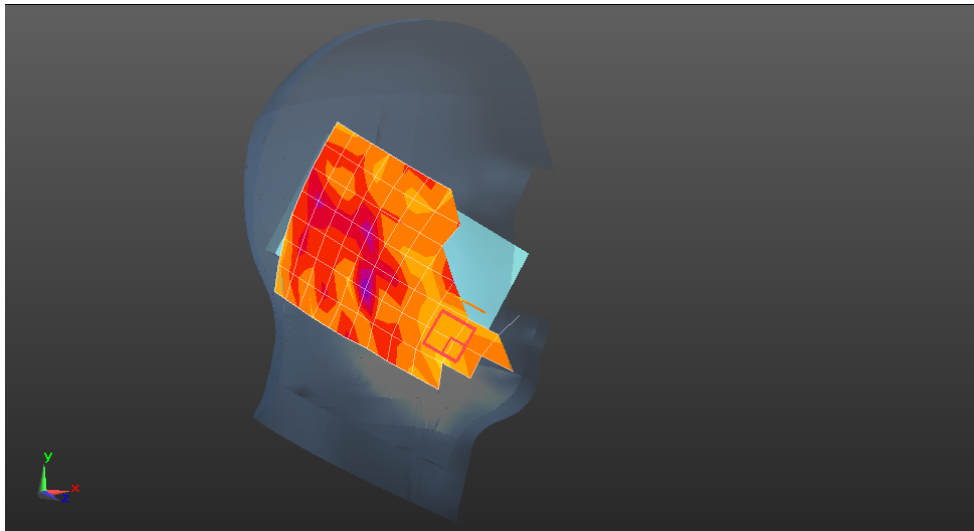
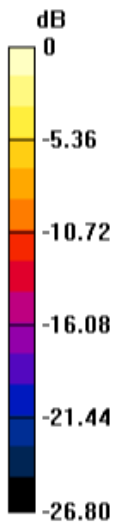
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.6800 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.0650 W/kg

SAR(1 g) = 0.005 W/kg; SAR(10 g) = 0.003 W/kg

Maximum value of SAR (measured) = 0.0424 W/kg



0 dB = 0.0424 W/kg = -13.73 dBW/kg

Date: 2021/09/27



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Test Laboratory: Compliance Certification Services Inc.

LTE Band 4 20M QPSK 1RB50 Back side Ch20300 10mm

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, FDD_LTE (0); Frequency: 1745 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1745 \text{ MHz}$; $\sigma = 1.336 \text{ S/m}$; $\epsilon_r = 40.697$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(8.22, 8.22, 8.22); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.0449 W/kg

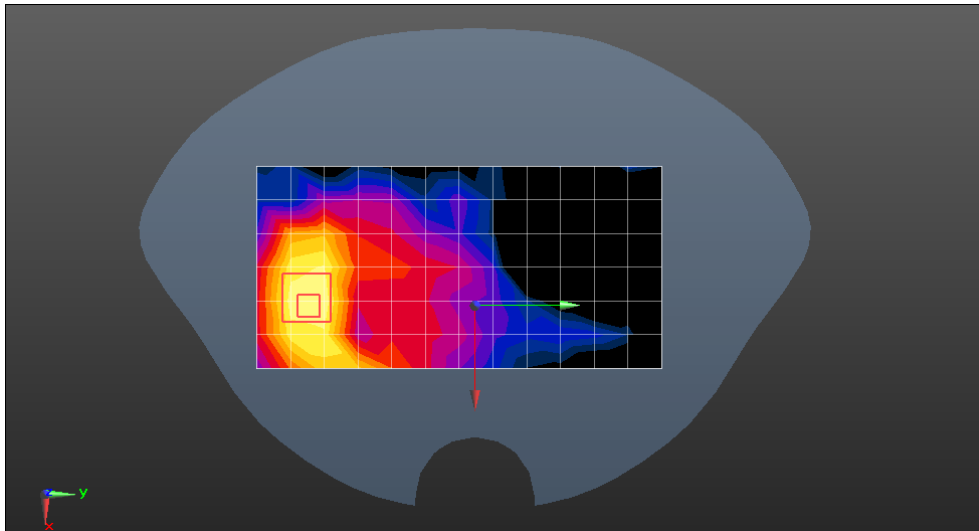
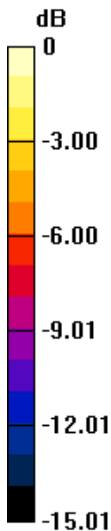
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.346 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.0690 W/kg

SAR(1 g) = 0.041 W/kg; SAR(10 g) = 0.023 W/kg

Maximum value of SAR (measured) = 0.0577 W/kg



0 dB = 0.0577 W/kg = -12.39 dBW/kg

Date: 2021/09/26



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Test Laboratory: Compliance Certification Services Inc.

LTE Band 5 10M QPSK 1RB25 Left cheek Ch20450

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, FDD_LTE (0); Frequency: 829 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 829 \text{ MHz}$; $\sigma = 0.904 \text{ S/m}$; $\epsilon_r = 42.406$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Left Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.52, 9.52, 9.52); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.0241 W/kg

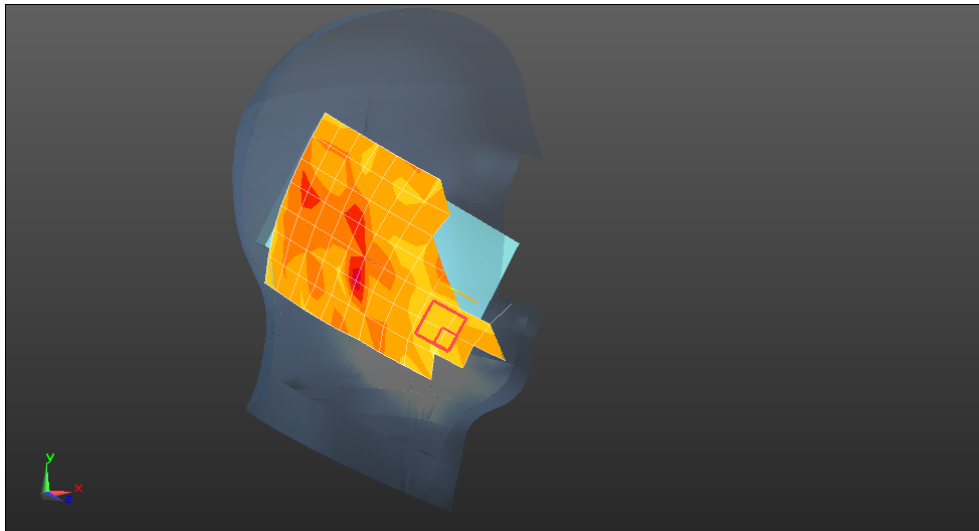
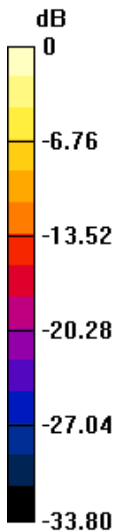
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.0690 W/kg

SAR(1 g) = 0.002 W/kg; SAR(10 g) = 0.001 W/kg

Maximum value of SAR (measured) = 0.0423 W/kg



0 dB = 0.0499 W/kg = -13.02 dBW/kg

Date: 2021/09/26



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Test Laboratory: Compliance Certification Services Inc.

LTE Band 5 10M QPSK 1RB25 Back side Ch20600 10mm

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, FDD_LTE (0); Frequency: 844 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 844 \text{ MHz}$; $\sigma = 0.912 \text{ S/m}$; $\epsilon_r = 41.998$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.52, 9.52, 9.52); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.00678 W/kg

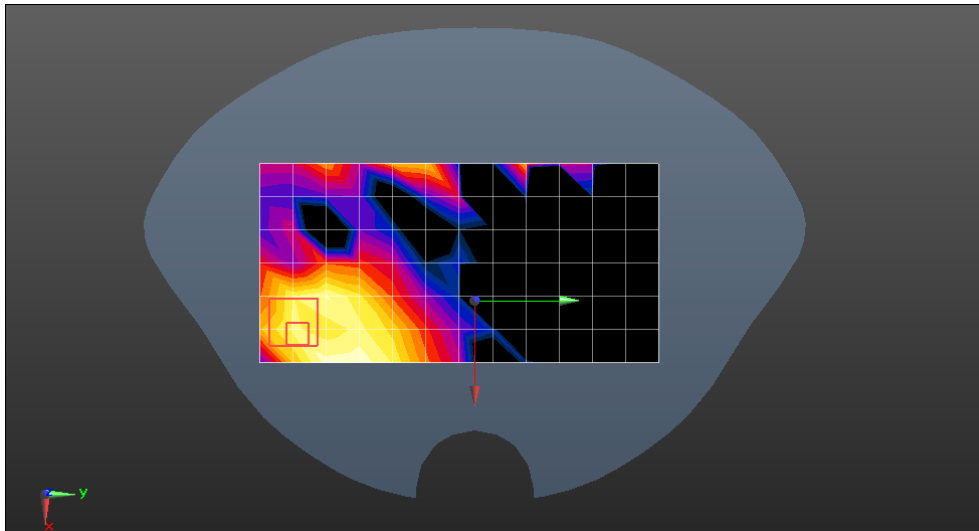
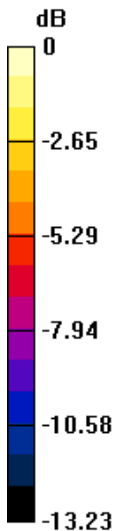
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.0120 W/kg

SAR(1 g) = 0.006 W/kg; SAR(10 g) = 0.004 W/kg

Maximum value of SAR (measured) = 0.00718 W/kg



0 dB = 0.00718 W/kg = -21.44 dBW/kg

Date: 2021/09/26



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Test Laboratory: Compliance Certification Services Inc.

LTE Band 12 10M QPSK 1RB25 Left cheek Ch23095

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, FDD_LTE (0); Frequency: 707.5 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 707.5 \text{ MHz}$; $\sigma = 0.855 \text{ S/m}$; $\epsilon_r = 43.526$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Left Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.78, 9.78, 9.78); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASYS2, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.0180 W/kg

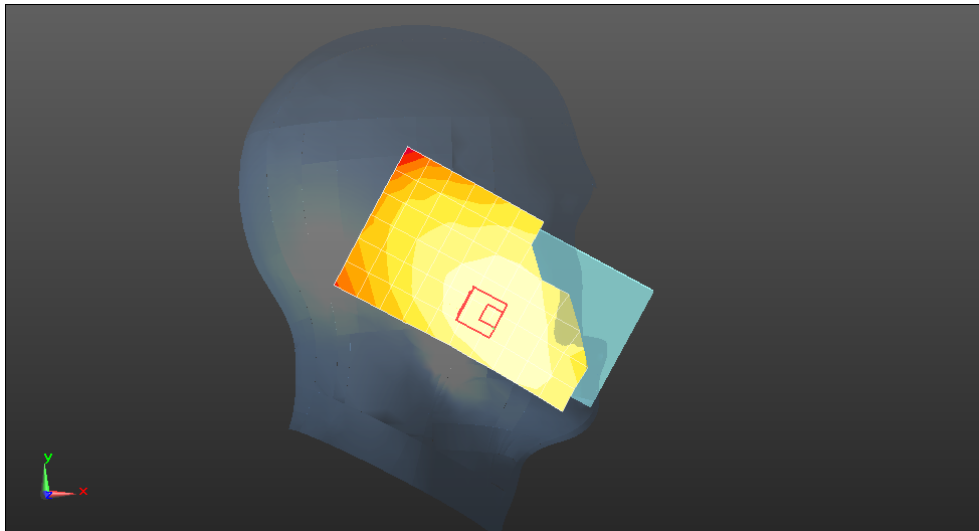
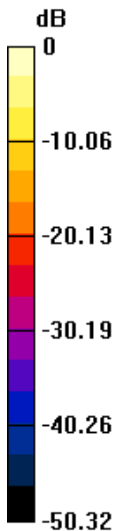
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.0490 W/kg

SAR(1 g) = 0.005 W/kg; SAR(10 g) = 0.002 W/kg

Maximum value of SAR (measured) = 0.0300 W/kg



0 dB = 0.0509 W/kg = -12.93 dBW/kg

Date: 2021/09/26



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Test Laboratory: Compliance Certification Services Inc.

LTE Band 12 10M QPSK 1RB25 Back side Ch23095 10mm

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

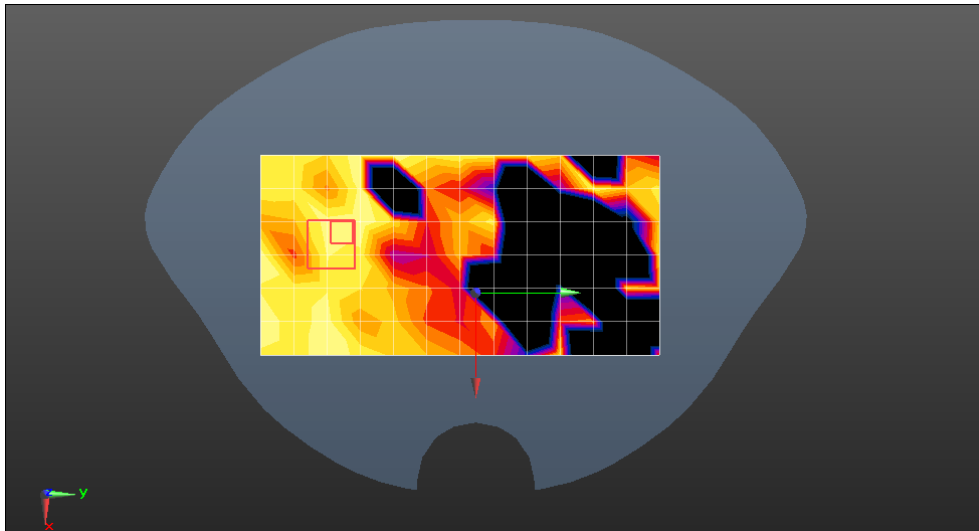
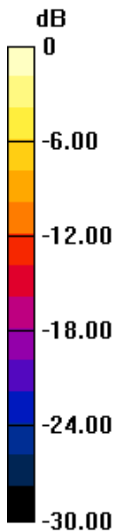
Communication System: UID 0, FDD_LTE (0); Frequency: 707.5 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 707.5 \text{ MHz}$; $\sigma = 0.855 \text{ S/m}$; $\epsilon_r = 43.526$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.78, 9.78, 9.78); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASYS2, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (measured) = 0.00274 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 0 V/m; Power Drift = -0.19 dB
 Peak SAR (extrapolated) = 0.00451 W/kg
SAR(1 g) = 0.002 W/kg; SAR(10 g) = 0.002 W/kg
 Maximum value of SAR (measured) = 0.00425 W/kg



0 dB = 0.00425 W/kg = -23.72 dBW/kg

Date: 2021/09/26



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Test Laboratory: Compliance Certification Services Inc.

LTE Band 13 10M QPSK 1RB25 Left cheek Ch23230

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, FDD_LTE (0); Frequency: 782 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 782 \text{ MHz}$; $\sigma = 0.911 \text{ S/m}$; $\epsilon_r = 42.087$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Left Section
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.78, 9.78, 9.78); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.0114 W/kg

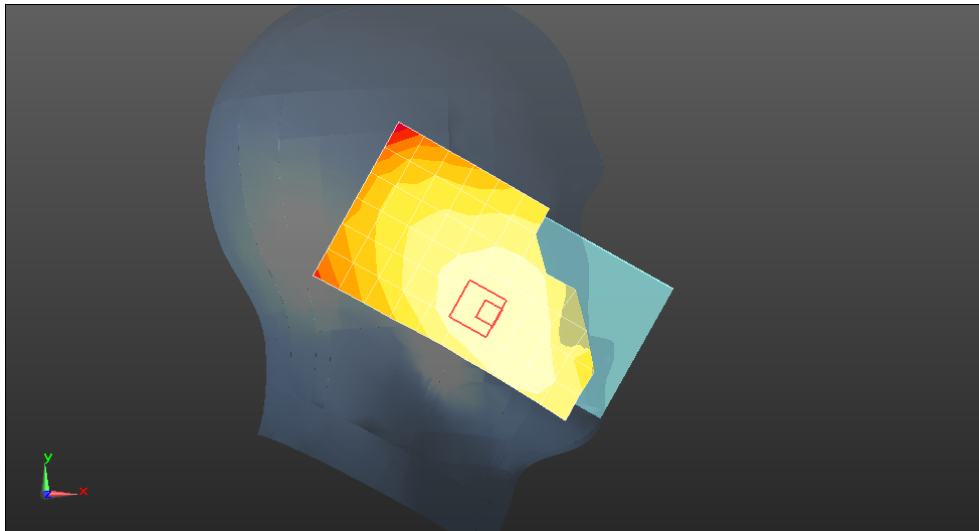
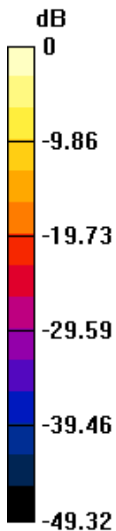
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.0490 W/kg

SAR(1 g) = 0.004 W/kg; SAR(10 g) = 0.001 W/kg

Maximum value of SAR (measured) = 0.0297 W/kg



0 dB = 0.0509 W/kg = -12.93 dBW/kg

Date: 2021/09/26



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Test Laboratory: Compliance Certification Services Inc.

LTE Band 13 10M QPSK 1RB25 Back side Ch23230 10mm

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, FDD_LTE (0); Frequency: 782 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 782 \text{ MHz}$; $\sigma = 0.911 \text{ S/m}$; $\epsilon_r = 42.087$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section
 Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.78, 9.78, 9.78); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.00445 W/kg

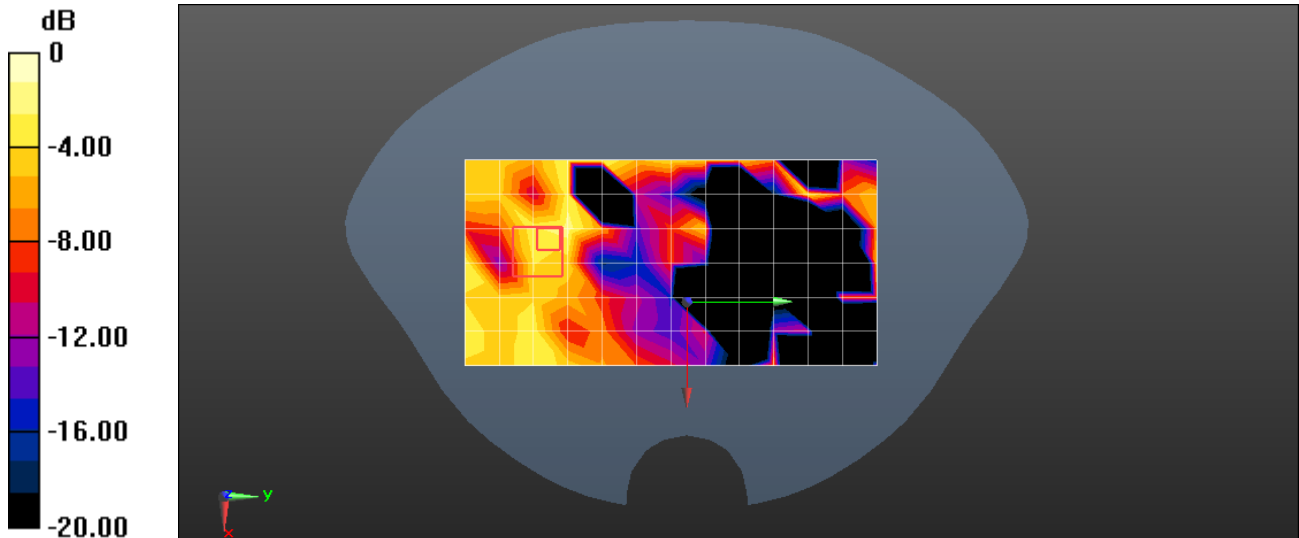
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.00527 W/kg

SAR(1 g) = 0.002 W/kg; SAR(10 g) = 0.001 W/kg

Maximum value of SAR (measured) = 0.00442 W/kg



0 dB = 0.00425 W/kg = -23.72 dBW/kg

Date: 2021/09/28



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Test Laboratory: Compliance Certification Services Inc.

WLAN2.4GHz 802.11b 1Mbps Right cheek Ch6

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, WiFi (0); Frequency: 2437 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2437 \text{ MHz}$; $\sigma = 1.793 \text{ S/m}$; $\epsilon_r = 38.8$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Right Section
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.33, 7.33, 7.33); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.534 W/kg

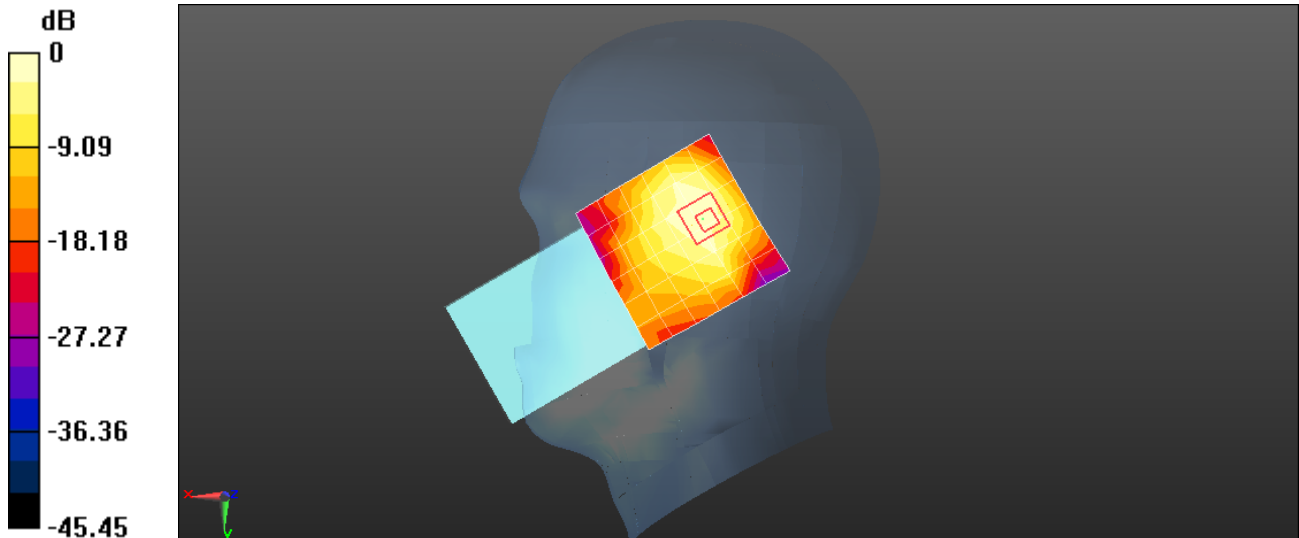
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.97 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.819 W/kg

SAR(1 g) = 0.113 W/kg; SAR(10 g) = 0.058 W/kg

Maximum value of SAR (measured) = 0.238 W/kg



0 dB = 0.238 W/kg = -6.23 dBW/kg

Date: 2021/09/28



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Test Laboratory: Compliance Certification Services Inc.

WLAN2.4GHz 802.11b 1Mbps Front side 10mm Ch1

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, WiFi (0); Frequency: 2412 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2412 \text{ MHz}$; $\sigma = 1.77 \text{ S/m}$; $\epsilon_r = 38.898$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.33, 7.33, 7.33); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (9x16x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.139 W/kg

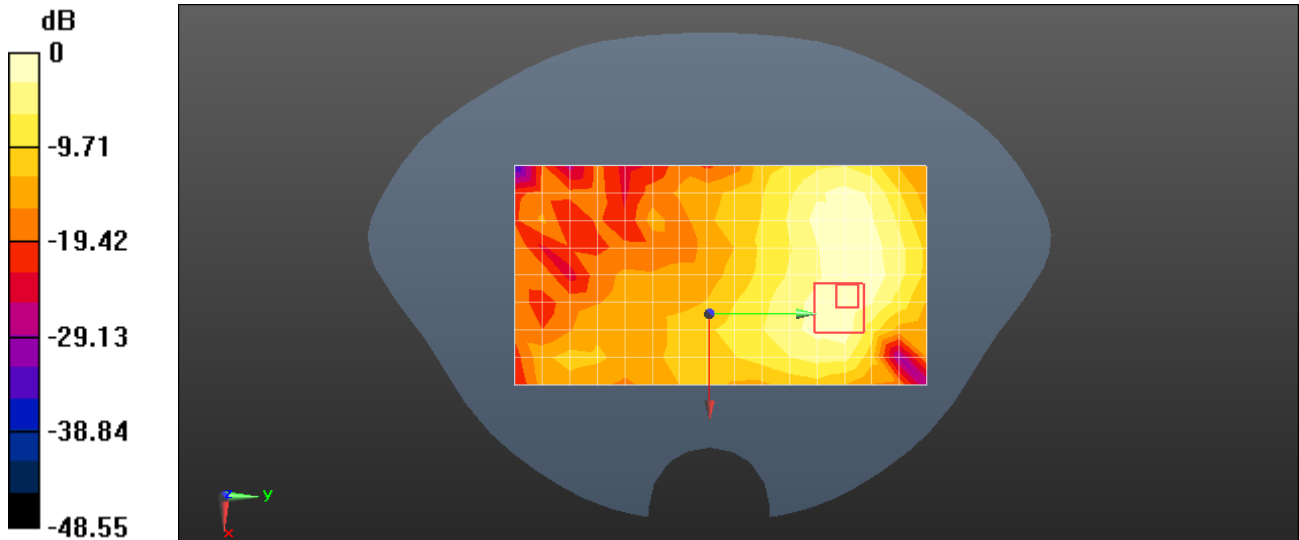
Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.579 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.189 W/kg

SAR(1 g) = 0.009 W/kg; SAR(10 g) = 0.005 W/kg

Maximum value of SAR (measured) = 0.019 W/kg



0 dB = 0.019 W/kg = -17.21 dBW/kg

Date: 2021/09/28



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Test Laboratory: Compliance Certification Services Inc.

WLAN2.4GHz 802.11b 1Mbps Top side 10mm Ch1

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, WiFi (0); Frequency: 2412 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2412 \text{ MHz}$; $\sigma = 1.77 \text{ S/m}$; $\epsilon_r = 38.898$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.33, 7.33, 7.33); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASYS2, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.192 W/kg

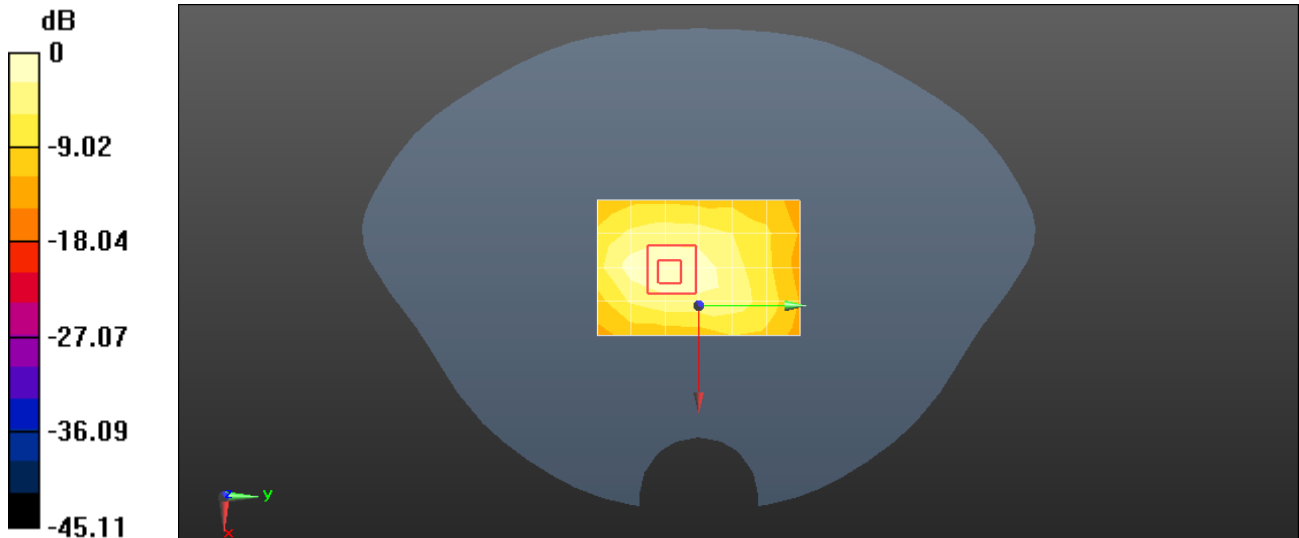
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.622 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.238 W/kg

SAR(1 g) = 0.011 W/kg; SAR(10 g) = 0.005 W/kg

Maximum value of SAR (measured) = 0.191 W/kg



0 dB = 0.021 W/kg = -16.78 dBW/kg

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Test Laboratory: Compliance Certification Services Inc.

Bluetooth DQPSK Right cheek Ch0

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, Bluetooth (0); Frequency: 2402 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2402$ MHz; $\sigma = 1.763$ S/m; $\epsilon_r = 38.916$; $\rho = 1000$ kg/m³
 Phantom section: Right Section
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.33, 7.33, 7.33); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.475 W/kg

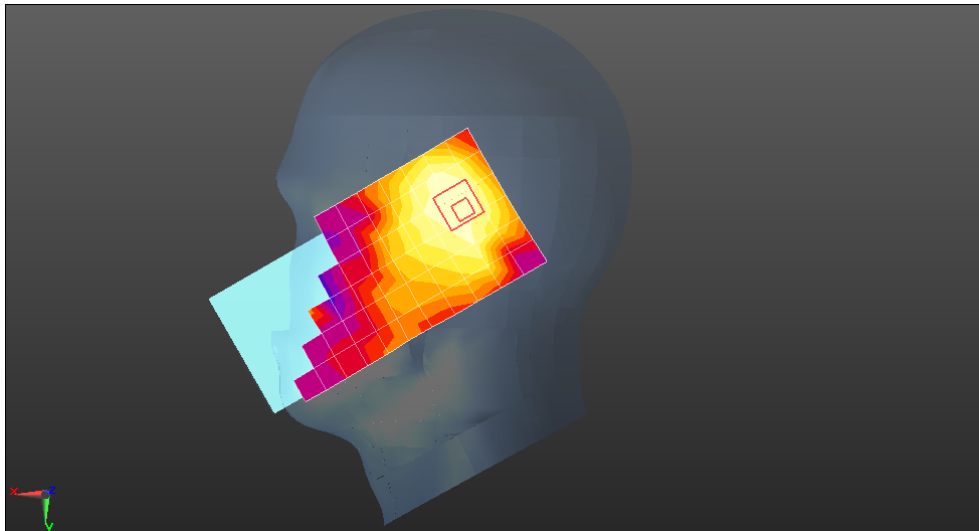
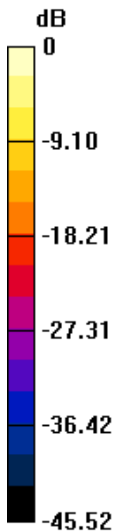
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.58 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.748 W/kg

SAR(1 g) = 0.009 W/kg; SAR(10 g) = 0.004 W/kg

Maximum value of SAR (measured) = 0.019 W/kg



0 dB = 0.019 W/kg = -17.21 dBW/kg

Date: 2021/09/28



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Test Laboratory: Compliance Certification Services Inc.

Bluetooth DQPSK Front side 10mm Ch0

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, Bluetooth (0); Frequency: 2402 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2402$ MHz; $\sigma = 1.763$ S/m; $\epsilon_r = 38.916$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.33, 7.33, 7.33); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (9x16x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.138 W/kg

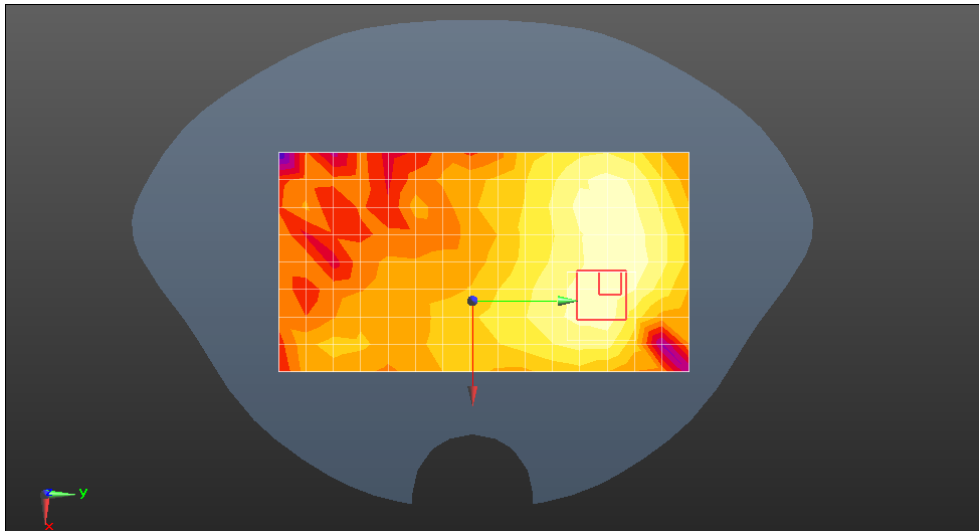
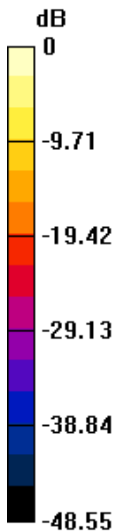
Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.577 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.188 W/kg

SAR(1 g) = 0.009 W/kg; SAR(10 g) = 0.004 W/kg

Maximum value of SAR (measured) = 0.018 W/kg



0 dB = 0.018 W/kg = -17.45 dBW/kg

Date: 2021/09/28



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Test Laboratory: Compliance Certification Services Inc.

WLAN5GHz 802.11a 6Mbps Right Cheek Ch64

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, WiFi (0); Frequency: 5320 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 5320 \text{ MHz}$; $\sigma = 4.731 \text{ S/m}$; $\epsilon_r = 36.448$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Right Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(4.75, 4.75, 4.75); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (10x19x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 1.09 W/kg

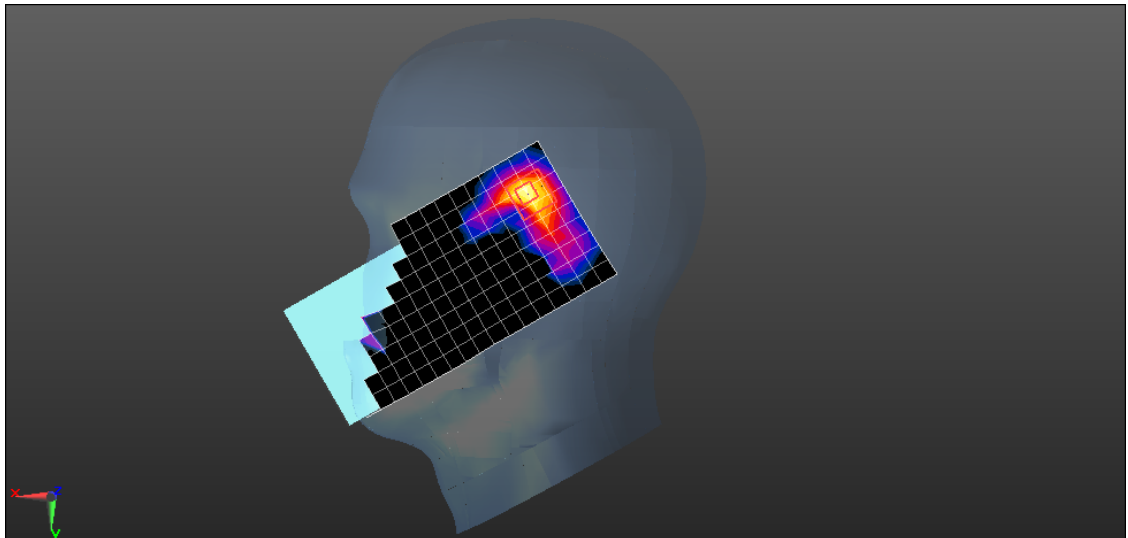
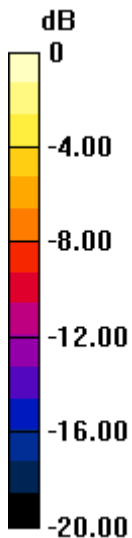
Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 6.124 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 2.25 W/kg

SAR(1 g) = 0.047 W/kg; SAR(10 g) = 0.015 W/kg

Maximum value of SAR (measured) = 0.270 W/kg



0 dB = 0.270 W/kg = -5.69 dBW/kg

Date: 2021/09/28



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Test Laboratory: Compliance Certification Services Inc.

WLAN5GHz 802.11a 6Mbps Back side 10mm Ch64

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, WiFi (0); Frequency: 5320 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 5320 \text{ MHz}$; $\sigma = 4.731 \text{ S/m}$; $\epsilon_r = 36.448$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(4.75, 4.75, 4.75); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (10x19x1): Measurement grid: dx=10mm, dy=10mm

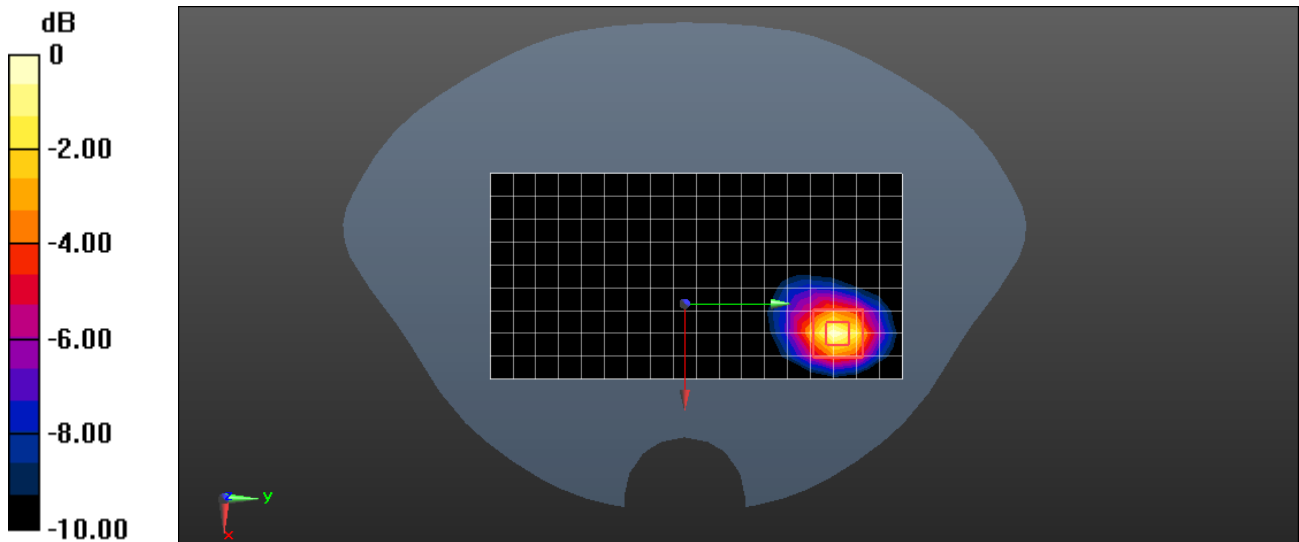
Maximum value of SAR (measured) = 1.10 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 2.845 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 1.79 W/kg

SAR(1 g) = 0.041 W/kg; SAR(10 g) = 0.013 W/kg



0 dB = 0.28 W/kg = -5.53 dBW/kg

Date: 2021/09/28

Test Laboratory: Compliance Certification Services Inc.



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WLAN5GHz 802.11a 6Mbps Back side 10mm Ch48

DUT: Mobile Payment Terminal; Type: M50; Serial: 2250000694

Communication System: UID 0, WiFi (0); Frequency: 5240 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 5240 \text{ MHz}$; $\sigma = 4.628 \text{ S/m}$; $\epsilon_r = 36.123$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section
 Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(4.85, 4.85, 4.85); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASYS2, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (10x10x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.792 W/kg

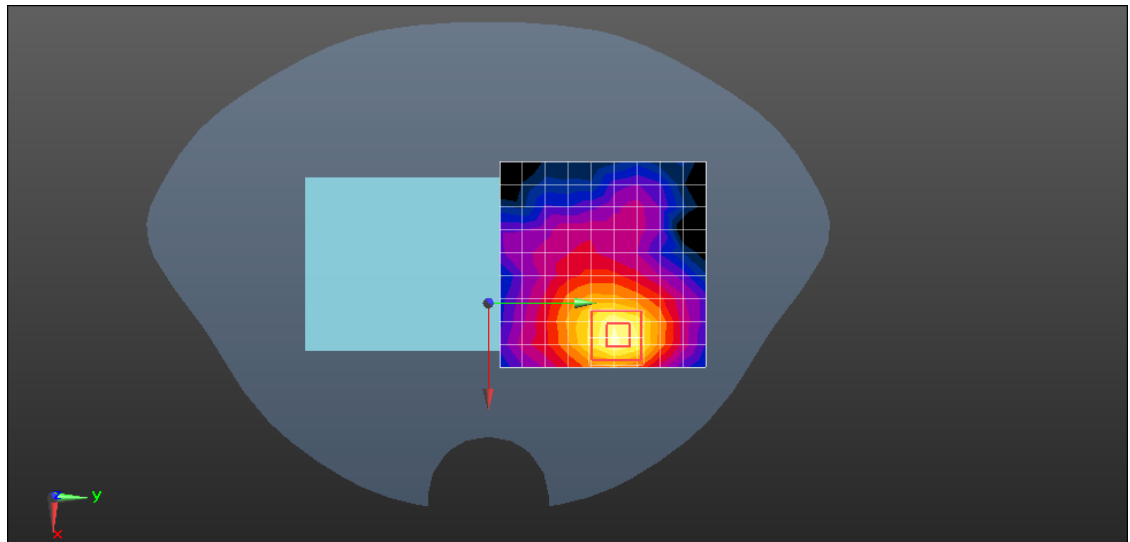
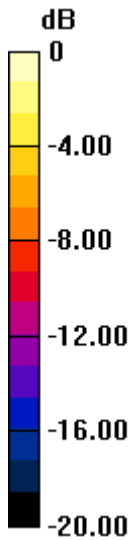
Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 2.493 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 1.59 W/kg

SAR(1 g) = 0.057 W/kg; SAR(10 g) = 0.017 W/kg

Maximum value of SAR (measured) = 0.332 W/kg



0 dB = 0.332 W/kg = -4.79 dBW/kg



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Appendix C: Calibration certificate

Appendix D: Photographs

---END---



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