

FCC SAR REPORT

Applicant: INFINIX MOBILITY LIMITED

Address of Applicant: FLAT 39 8/F BLOCK D WAH LOK INDUSTRIAL CENTRE 31-35 SHAN MEI STREET FOTAN NT

Equipment Under Test (EUT)

Product Name: Mobile Phone

Model No.: X659B

Trade mark: Infinix

FCC ID: 2AIZN-X659B

Applicable standards: FCC 47 CFR Part 2.1093

Date of Test: 10 Jan., 2021 ~ 22 Jan., 2021

Test Result: Maximum Reported 1-g SAR (W/kg)
Head: 0.429 Body: 0.225 Hotspot: 0.265

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the JYT product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2 Version

Version No.	Date	Description
00	24 Jan., 2021	Original

Tested by:*Kim Li***Date:***24 Jan., 2021*

Test Engineer**Reviewed by:***Tanet Wei***Date:***24 Jan., 2021*

Project Engineer

3 Contents

1	COVER PAGE	1
2	VERSION	2
3	CONTENTS	3
4	SAR RESULTS SUMMARY	5
5	GENERAL INFORMATION	7
5.1	CLIENT INFORMATION.....	7
5.2	GENERAL DESCRIPTION OF EUT	7
5.3	MAXIMUM RF OUTPUT POWER	9
5.4	ENVIRONMENT OF TEST SITE	10
5.5	TEST SAMPLE PLAN	10
5.6	TEST LOCATION	10
6	INTRODUCTION	11
6.1	INTRODUCTION	11
6.2	SAR DEFINITION	11
7	RF EXPOSURE LIMITS	12
7.1	UNCONTROLLED ENVIRONMENT.....	12
7.2	CONTROLLED ENVIRONMENT	12
7.3	RF EXPOSURE LIMITS	12
8	SAR MEASUREMENT SYSTEM	13
8.1	E-FIELD PROBE.....	14
8.2	DATA ACQUISITION ELECTRONICS (DAE).....	14
8.3	ROBOT	15
8.4	MEASUREMENT SERVER	15
8.5	LIGHT BEAM UNIT.....	15
8.6	PHANTOM.....	16
8.7	DEVICE HOLDER.....	17
8.8	DATA STORAGE AND EVALUATION	18
8.9	TEST EQUIPMENT LIST	20
9	TISSUE SIMULATING LIQUIDS	21
10	SAR SYSTEM VERIFICATION	24
11	EUT TESTING POSITION	26
11.1	HANDSET REFERENCE POINTS	26
11.2	POSITIONING FOR CHEEK / TOUCH	27
11.3	POSITIONING FOR EAR / 15° TILT	27
11.4	SAR EVALUATIONS NEAR THE MOUTH/JAW REGIONS OF THE SAM PHANTOM	28
11.5	BODY WORN ACCESSORY CONFIGURATIONS	28
11.6	WIRELESS ROUTER (HOTSPOT) CONFIGURATIONS	29
12	MEASUREMENT PROCEDURES	30
12.1	SPATIAL PEAK SAR EVALUATION	30
12.2	POWER REFERENCE MEASUREMENT.....	30
12.3	AREA & ZOOM SCAN PROCEDURES.....	31
12.4	VOLUME SCAN PROCEDURES	31
12.5	SAR AVERAGED METHODS	32
12.6	POWER DRIFT MONITORING	32
13	CONDUCTED RF OUTPUT POWER	33
13.1	GSM CONDUCTED POWER	33
13.2	WCDMA CONDUCTED POWER	35
13.3	LTE CONDUCTED POWER	38
13.4	WLAN 2.4 GHz BAND CONDUCTED POWER	55
13.5	WLAN 5.2GHz BAND CONDUCTED POWER	56
13.6	WLAN 5.8GHz BAND CONDUCTED POWER	57
13.7	BLUETOOTH CONDUCTED POWER	58
14	EXPOSURE POSITIONS CONSIDERATION	59
14.1	EUT ANTENNA LOCATIONS.....	59

14.2 TEST POSITIONS CONSIDERATION 60

15 SAR TEST RESULTS SUMMARY 61

15.1 STANDALONE HEAD SAR DATA..... 61

15.2 STANDALONE BODY SAR 64

15.3 BODY SAR IN HOTSPOT MODE 67

15.4 MULTI-BAND SIMULTANEOUS TRANSMISSION CONSIDERATIONS..... 71

15.5 SAR SIMULTANEOUS TRANSMISSION ANALYSIS..... 72

15.6 MEASUREMENT UNCERTAINTY..... 84

15.7 MEASUREMENT CONCLUSION 86

16 REFERENCE..... 87

APPENDIX A: PLOTS OF SAR SYSTEM CHECK 88

APPENDIX B: PLOTS OF SAR TEST DATA 96

APPENDIX C: SYSTEM CALIBRATION CERTIFICATE..... 143

4 SAR Results Summary

The maximum results of Specific Absorption Rate (SAR) found during test as bellows:
<Highest Reported standalone SAR Summary>

Exposure Position	Frequency Band	Reported 1-g SAR (W/kg)	Equipment Class	Highest Reported 1-g SAR (W/kg)
Head	GSM 850	0.014	PCE	0.429
	GSM 1900	0.355		
	WCDMA Band V	0.006		
	WCDMA Band II	0.311		
	LTE Band 2	0.276		
	LTE Band 4	0.314		
	LTE Band 5	0.260		
	LTE Band 7	0.222		
	LTE Band 38	0.086		
	LTE Band 41	0.091		
	WLAN 2.4 GHz	0.429	DTS	
	WLAN 5.2 GHz	0.164	NII	
	WLAN 5.8 GHz	0.328		
Body (10 mm Gap)	GSM 850	0.003	PCE	0.225
	GSM 1900	0.100		
	WCDMA Band V	0.002		
	WCDMA Band II	0.086		
	LTE Band 2	0.070		
	LTE Band 4	0.086		
	LTE Band 5	0.113		
	LTE Band 7	0.191		
	LTE Band 38	0.074		
	LTE Band 41	0.069		
	WLAN 2.4GHz	0.225	DTS	
	WLAN 5.2 GHz	0.056	NII	
	WLAN 5.8 GHz	0.073		
Hotspot (10 mm Gap)	GSM 850	0.006	PCE	0.265
	GSM 1900	0.265		
	WCDMA Band V	0.002		
	WCDMA Band II	0.147		
	LTE Band 2	0.130		
	LTE Band 4	0.146		
	LTE Band 5	0.113		
	LTE Band 7	0.191		
	LTE Band 38	0.074		
	LTE Band 41	0.069		
	WLAN 2.4 GHz	0.225	DTS	
	WLAN 5.2 GHz	0.120	NII	
	WLAN 5.8 GHz	0.073		

<Highest Reported simultaneous SAR Summary>

Exposure Position	Frequency Band	Reported 1-g SAR (W/kg)	Equipment Class	Highest Reported Simultaneous Transmission 1-g SAR (W/kg)
Left Tilted	GSM 1900	0.316	PCE	0.745
	WLAN 2.4 GHz	0.429	DTS	

Note:

- The highest simultaneous transmission is scalar summation of Reported standalone SAR per FCC KDB 690783 D01 v01r03, and scalar SAR summation of all possible simultaneous transmission scenarios are < 1.6W/kg.

2. This device is compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-2005, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013.

5 General Information

5.1 Client Information

Applicant:	INFINIX MOBILITY LIMITED
Address of Applicant:	FLAT 39 8/F BLOCK D WAH LOK INDUSTRIAL CENTRE 31-35 SHAN MEI STREET FOTAN NT
Manufacturer:	INFINIX MOBILITY LIMITED
Address of Manufacturer:	FLAT 39 8/F BLOCK D WAH LOK INDUSTRIAL CENTRE 31-35 SHAN MEI STREET FOTAN NT

5.2 General Description of EUT

Product Name:	Mobile Phone			
Model No.:	X659B			
Category of device	Portable device			
Operation Frequency:	2G :	GSM850: 824.2~848.8 MHz	PCS 1900: 1850.2~1909.8 MHz	
	3G :	Band II: 1852.4~1907.6 MHz	Band V: 826.4~846.6 MHz	
	4G :	Band 2 :1850MHz~1910MHz	Band 4 :1710MHz~1755MHz	
		Band 5 :824MHz~849MHz	Band 7: 2500MHz~2570MHz	
		Band 38: 2570MHz~2620MHz	Band 41: 2555MHz~2655MHz	
	Wi-Fi:	2412MHz~2472MHz	5180MHz~5240MHz	
		5725MHz~5850MHz		
Bluetooth: 2402 MHz ~ 2480 MHz				
Modulation technology:	2G:	<input checked="" type="checkbox"/> Voice(GMSK)	<input checked="" type="checkbox"/> GPRS(GMSK)	<input checked="" type="checkbox"/> EGPRS(GMSK, 8PSK)
	3G:	<input checked="" type="checkbox"/> RCM(QPSK)	<input checked="" type="checkbox"/> HSUPA(QPSK)	<input checked="" type="checkbox"/> HSDPA(QPSK, 16QAM)
	4G:	<input checked="" type="checkbox"/> QPSK	<input checked="" type="checkbox"/> 16QAM	<input checked="" type="checkbox"/> 64QAM
	Wi-Fi:	<input checked="" type="checkbox"/> 802.11b(DSSS)		<input checked="" type="checkbox"/> 802.11a/g/n/ac (OFDM)
	Bluetooth:	<input checked="" type="checkbox"/> BDR(GFSK)	<input checked="" type="checkbox"/> EDR(π /4-DQPSK, 8DPSK)	<input checked="" type="checkbox"/> LE(GFSK)
Antenna Type:	Internal Antenna			
Antenna Gain:	GSM 850: -2.9 dBi(declare by Applicant) PCS 1900: -0.9 dBi(declare by Applicant) WCDMA Band V: -2.9 dBi(declare by Applicant) WCDMA Band II: -0.9 dBi(declare by Applicant) LTE Band 2: -0.9 dBi(declare by Applicant) LTE Band 4: -2.4 dBi(declare by Applicant) LTE Band 5: -2.9 dBi(declare by Applicant) LTE Band 7: -0.1 dBi(declare by Applicant) LTE Band 38: -0.1 dBi(declare by Applicant) LTE Band 41: -0.1 dBi(declare by Applicant) 2.4G Wi-Fi: 1.2dBi; 5G Wi-Fi: -0.9dBi Bluetooth: 1.2 dBi			
(E)GPRS Class:	(E)GPRS Class: 12			
Dimensions (L*W*H):	165 mm (L)× 76 mm (W)× 8 mm (H)			
Accessories information:	Adapter: Model: U100XSA	Battery: Rechargeable Li-ion Battery 3.87V/5850mAh		

	Input: AC100-240V, 50/60Hz, 0.3A Output: DC 5.0V \approx 2A	Headset: Support headset
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5.3 Maximum RF Output Power

Mode	Average Power (dBm)	
	GSM 850	GSM 1900
GSM (Voice)	32.97	30.03
GPRS (1 TX Slot)	32.96	30.02
GPRS (2 TX Slots)	31.99	29.10
GPRS (3 TX Slots)	29.96	27.07
GPRS (4 TX Slots)	28.83	25.93
EGPRS (1 TX Slot)	27.79	26.91
EGPRS (2 TX Slots)	26.59	25.87
EGPRS (3 TX Slots)	24.38	23.94
EGPRS (4 TX Slots)	22.99	22.97

Mode	Average Power (dBm)	
	WCDMA Band V	WCDMA Band II
AMR 12.2 kbps	24.18	24.18
RMC 12.2 kbps	24.22	24.26
HSDPA Sub-test 1	23.28	23.24
HSDPA Sub-test 2	22.85	22.79
HSDPA Sub-test 3	21.27	21.41
HSDPA Sub-test 4	21.41	21.32
HSUPA Sub-test 1	24.12	24.15
HSUPA Sub-test 2	23.77	23.75
HSUPA Sub-test 3	21.76	21.72
HSUPA Sub-test 4	24.17	24.16
HSUPA Sub-test 5	22.78	22.65

Mode	Average Power (dBm)					
	LTE Band 2	LTE Band 4	LTE Band 5	LTE Band 7	LTE Band 38	LTE Band 41
BW/1.4 MHz	23.13	23.12	23.45	/	/	/
BW/3.0 MHz	23.08	23.04	23.47	/	/	/
BW/5.0 MHz	23.06	23.05	23.46	22.69	22.55	22.56
BW/10 MHz	23.13	23.16	23.51	22.75	22.75	22.75
BW/15 MHz	23.06	23.05	/	22.65	22.55	22.55
BW/20 MHz	23.14	23.14	/	22.66	22.72	22.75

WLAN 2.4 GHz Band Average Power (dBm)				
Mode/Band	b	g	n (HT-20)	n (HT-40)
WLAN 2.4GHz	15.68	13.60	13.50	13.00

WLAN 5.2 GHz Band Average Power (dBm)						
Mode/Band	a	ac20	ac40	ac80	n 20	n 40
WLAN 5.2GHz	8.96	8.88	8.72	8.84	8.86	8.67

WLAN 5.8 GHz Band Average Power (dBm)						
Mode/Band	a	ac20	ac40	ac80	n 20	n 40
WLAN 5.8GHz	11.58	11.51	10.20	10.24	11.61	10.16

Bluetooth Peak Power (dBm)				
Mode/Band	1 Mbps(GFSK)	2 Mbps(π /4DQPSK)	3 Mbps (8DPSK)	LE (BT 4.0)
Bluetooth	6.36	5.75	5.73	-5.97

5.4 Environment of Test Site

Temperature:	18°C ~25 °C
Humidity:	35%~75% RH
Atmospheric Pressure:	1010 mbar

5.5 Test Sample Plan

Sample Number	Used for Test Items
4#	SAR
<i>Remark: JianYan Testing Group Shenzhen Co., Ltd. is only responsible for the test project data of the above samples, and will keep the above samples for a month.</i>	

5.6 Test Location

JianYan Testing Group Shenzhen Co., Ltd.
 Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.
 Tel: +86-755-23118282, Fax: +86-755-23116366
 Email: info@ccis-cb.com, Website: http://www.ccis-cb.com

6 Introduction

6.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

6.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$SAR = \frac{d}{dt} \left(\frac{dU}{dm} \right) = \frac{d}{dt} \left(\frac{dU}{\rho dv} \right)$$

SAR is expressed in units of Watts per kilogram (W/kg)

SAR measurement can be either related to the temperature elevation in tissue by

$$SAR = C \left(\frac{\delta T}{\delta t} \right)$$

Where: C is the specific heat capacity, δT is the temperature rise and δt is the exposure duration, or related to the electrical field in the tissue by

$$SAR = \frac{\sigma \cdot E^2}{\rho}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength. However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

7 RF Exposure Limits

7.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

7.2 Controlled Environment

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). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

7.3 RF Exposure Limits

SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

HUMAN EXPOSURE LIMITS		
	UNCONTROLLED ENVIRONMENT <i>General Population</i> (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT <i>Occupational</i> (W/kg) or (mW/g)
SPATIAL PEAK SAR Brain	1.6	8.0
SPATIAL AVERAGE SAR Whole Body	0.08	0.4
SPATIAL PEAK SAR Hands, Feet, Ankles, Wrists	4.0	20

Note:

1. 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.
2. The Spatial Average value of the SAR averaged over the whole body.
3. 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.

8 SAR Measurement System

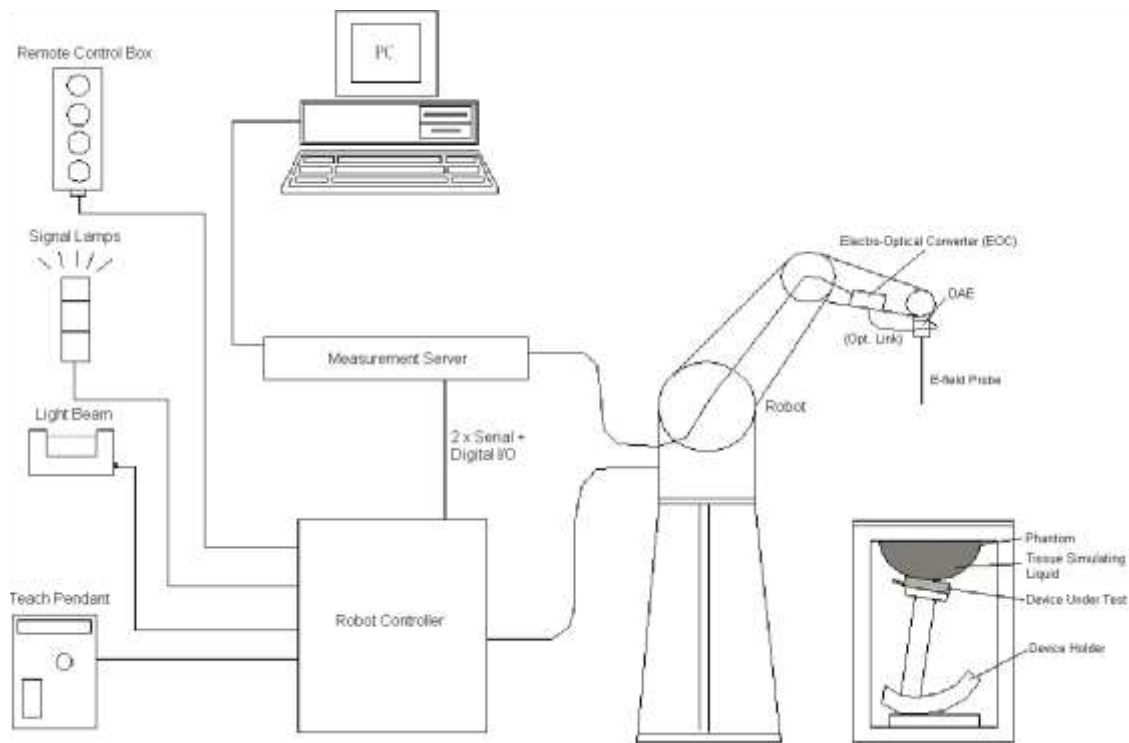


Fig. 8.1 SPEAG DASY System Configurations

The DASY system for performance compliance tests is illustrated above graphically. This system consists of the following items:

- A standard high precision 6-axis robot with controller, a teach pendant and software
- A data acquisition electronic (DAE) attached to the robot arm extension
- A dosimetric probe equipped with an optical surface detector system
- The electro-optical converter (EOC) performs the conversion between optical and electrical signals
- A measurement server performs the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the accuracy of the probe positioning
- A computer operating Windows XP
- DASY software
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom
- A device holder
- Tissue simulating liquid
- Dipole for evaluating the proper functioning of the system

Component details are described in the following sub-sections.

8.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG). The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

➤ **E-Field Probe Specification
<EX3DV4 Probe>**


Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency Directivity	10 MHz to 6 GHz; Linearity: ± 0.2 dB ± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 µW/g to 100 mW/g; Linearity: ± 0.2 dB (noise: typically < 1 µW/g)	
Dimensions	Overall length: 330 mm (Tip: 20mm) Tip diameter: 2.5 mm (Body: 12mm) Typical distance from probe tip to dipole centers: 1 mm	

Fig. 8.2 Photo of E-Field Probe

➤ **E-Field Probe Calibration**

Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than ± 10%. The spherical isotropy shall be evaluated and within ± 0.25 dB. The sensitivity parameters (Norm X, Norm Y and Norm Z), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested. The calibration data can be referred to appendix E of this report.

8.2 Data Acquisition Electronics (DAE)


<p>The Data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock. The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.</p>	
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Fig. 8.3 Photo of DAE

8.3 Robot

The SPEAG DASY system uses the high precision robots (DASY5: TX60L) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability 0.02 mm)
- High reliability (industrial design)
- Low maintenance costs (virtually maintenance free due to direct drive gears; no belt drives)
- Jerk-free straight movements
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)



Fig. 8.4 Photo of Robot

8.4 Measurement Server

The measurement server is based on a PC/104 CPU board with CPU (DASY 5: 400MHz, Intel Celeron), chip-disk (DASY5: 128 MB), RAM (DASY5: 128 MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY I/O board, which is directly connected to the PC/104 bus of the CPU board. The measurement server performs all the real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operations.



Fig. 8.5 Photo of Server for DASY5

8.5 Light Beam Unit

The light beam switch allows automatic "tooling" of the probe. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip.


The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.



Fig. 8.6 Photo of Light Beam

8.6 Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	 <p>Fig. 8.7 Photo of SAM Twin Phantom</p>
Filling Volume Dimensions	Approx. 25 liters Length: 1000mm; Width: 500mm; Height: adjustable feet	
Measurement Areas	Left Head, Right Head, Flat phantom	

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI4 Phantom >

The ELI4 phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30MHz to 6 GHz. ELI4 is fully compatible with the latest draft of the standard IEC 62209-2 and all known tissue simulating liquids.

ELI4 has been optimized regarding its performance and can be integrated into a SPEAG standard phantom table. 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 can be used with the following tissue simulating liquids:

- Water-sugar based liquids can be left permanently in the phantom. Always cover the liquid if the system is not in use; otherwise the parameters will change due to water evaporation.
- DGBE based liquids should be used with care. As DGBE is a softener for most plastics, the liquid should be taken out of the phantom and the phantom should be dried when the system is not in use (desirable at least once a week).
- Do not use other organic solvents without previously testing the phantom resistiveness

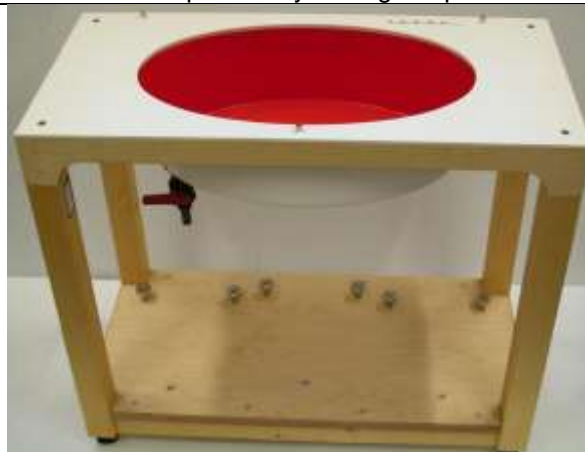


Fig.8.8 Photo of ELI4 Phantom

8.7 Device Holder

<Device Holder for SAM Twin Phantom>

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ± 0.5 mm would produce a SAR uncertainty of ± 20 %. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards. 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 center for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles. The DASY device holder is constructed of low-low 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.



Fig. 8.9 Photo of Device Holder

8.8 Data storage and Evaluation

➤ Data Storage

The DASY software stores the assessed data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files. The post-processing software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verifications of the complete software setup even after the measurement and allows correction of erroneous parameter settings. For example, if a measurement has been performed with an incorrect crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be reevaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type (e.g., [V/m], [mW/g]). Some of these units are not available in certain situations or give meaningless results, e.g., a SAR-output in a non-lose media, will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

➤ Data Evaluation

The DASY post-processing software (SEMCAD) automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe Parameters:	- Sensitivity	Norm _i , a _{i0} , a _{i1} , a _{i2}
	- Conversion	ConvF _i
	- Diode compression point	dcp _i
Device Parameters:	- Frequency	f
	- Crest	cf
Media Parameters:	- Conductivity	σ
	- Density	ρ

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multi-meter 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:

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}$$

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

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

$$\text{E- Field Probes: } E_i = \sqrt{\frac{V_i}{\text{Norm}_i \cdot \text{ConvF}}}$$

$$\text{H-Field Probes: } H_i = \sqrt{V_i} \cdot \frac{a_{i0} + a_{i1}f + a_{i2}f^2}{f}$$

With V_i = compensated signal of channel i, (i = x, y, z)
 Norm_i = sensor sensitivity of channel i, (i = x, y, z), $\mu\text{V}/(\text{V/m})^2$
 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):

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

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

$$SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1000}$$

With SAR = local specific absorption rate in mW/g
 E_{tot} = total field strength in V/m
 σ = conductivity in (mho/m) or (Siemens/m)
 ρ = equipment tissue density in g/cm^3

Note that the density is set to 1, to account for actual head tissue density rather than the density of the tissue simulating liquid.

8.9 Test Equipment List

Manufacturer	Equipment Description	Model	S/N	Cal. Information	
				Last Cal.	Due Date
SPEAG	835MHz System Validation Kit	D835V2	4d154	06.11.2019	06.10.2022
MVG	COMOSAR 1800 MHz REFERENCE DIPOLE	SID1800	SN 09/15 DIP 1G800-360	02.28.2018	02.27.2021
SPEAG	1900MHz System Validation Kit	D1900V2	5d175	06.11.2019	06.10.2022
SPEAG	2450MHz System Validation Kit	D2450V2	910	06.10.2019	06.09.2022
SPEAG	2600MHz System Validation Kit	D2600V2	1114	11.05.2018	11.04.2021
SPEAG	5000MHz System Validation Kit	D5GHzV2	1182	02.21.2018	02.20.2021
SPEAG	Data Acquisition Electronics	DAE4	1373	07.27.2020	07.26.2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	3924	09.23.2020	09.22.2021
SPEAG	DASY 52 Measurement Software	DASY 52	Version: 52.8.8.1222	N.C.R	N.C.R
SPEAG	DASY 52 File Conversion Software	SEMCAD X	Version: 14.6.10 (7331)	N.C.R	N.C.R
SPEAG	Phantom	Twin Phantom	1765	N.C.R	N.C.R
SPEAG	Phantom	ELI V5.0	1208	N.C.R	N.C.R
SPEAG	Phone Positioner	N/A	N/A	N.C.R	N.C.R
Stäubli	Robot	TX60L	F13/5P6VB1/A/01	N.C.R	N.C.R
Anritsu	Universal Radio Communication Analyzer	MT8820C	6201060814	03.18.2020	03.17.2021
R&S	Universal Radio Communication Tester	CMU200	113097	03.18.2020	03.17.2021
HP	Network Analyzer	8753D	3410A06291	06.18.2020	06.17.2021
Agilent	Spectrum Analyzer	ESRP7	101070	03.18.2020	03.17.2021
R&S	Spectrum Analyzer	FSP30	101454	03.18.2020	03.17.2021
R&S	Signal Generator	N5182A	MY49060014	11.18.2020	11.17.2021
Huber Suhner	RF Cable	SUCOFLEX	12341	See Note 3	
Huber Suhner	RF Cable	SUCOFLEX	17268	See Note 3	
Huber Suhner	RF Cable	SUCOFLEX	2080	See Note 3	
Weinschel	Attenuator	23-3-34	BL5513	See Note 3	
Anritsu	Directional Coupler	MP654A	100217491	See Note 3	
SPEAG	Dielectric Assessment Kit	3.5 Probe	1119	See Note 4	
SPEAG	DAK Measurement Software	DAK	Version: DAK 3.5	N.C.R	
Mini-circuits	Low Noise Amplifier	Power amplifier	LNA-00500200-2515	See Note 5	

Note:

1. The calibration certificate of DASY can be referred to appendix C of this report.
2. Referring to KDB 865664 D01v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The Insertion Loss calibration of Dual Directional Coupler and Attenuator were characterized via the network analyzer and compensated during system check.
4. The dielectric probe kit was calibrated via the network analyzer, with the specified procedure (calibrated in pure water) and calibration kit (standard) short circuit, before the dielectric measurement. The specific procedure and calibration kit are provided by Speag.
5. In system check we need to monitor the level on the spectrum analyzer, and adjust the power amplifier level to have precise power level to the dipole; the measured SAR will be normalized to 1 W input power according to the ratio of 1 W to the input power to the dipole. For system check, the calibration of the power amplifier is deemed not critically required for correct measurement; the spectrum analyzer is critical and we do have calibration for it
6. Attenuator insertion loss is calibrated by the network Analyzer, which the calibration is valid, before system check.
7. N.C.R means No Calibration Requirement.

9 Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASy, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 9.1, for body SAR testing, the liquid height from the center of the flat phantom to liquid top surface is larger than 15 cm, which is shown in Fig. 9.2.

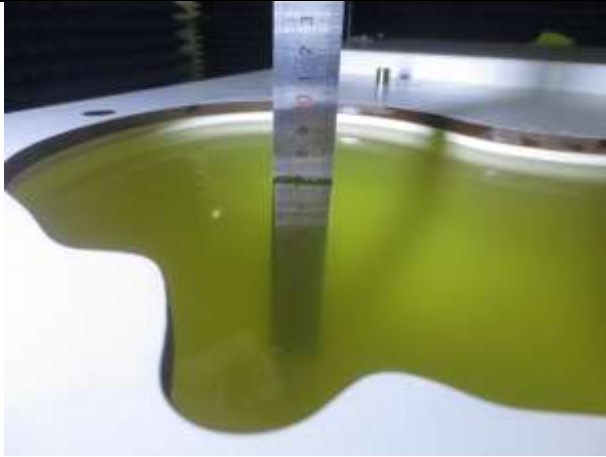


Fig. 9.1 Photo of Liquid Height for Head SAR (700MHz~1000MHz)(depth>15cm)

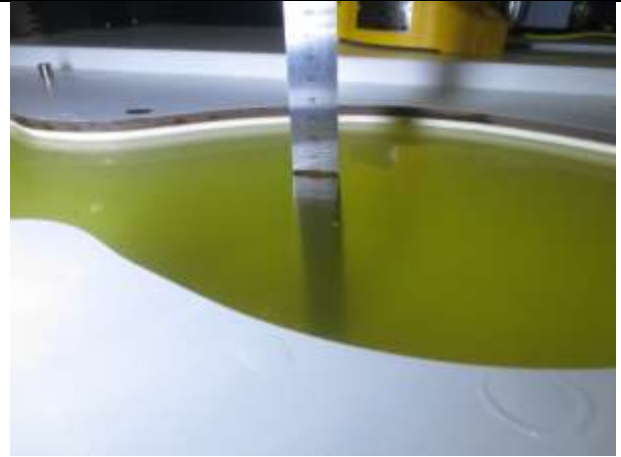


Fig. 9.2 Photo of Liquid Height for Body SAR (700MHz~1000MHz)(depth>15cm)

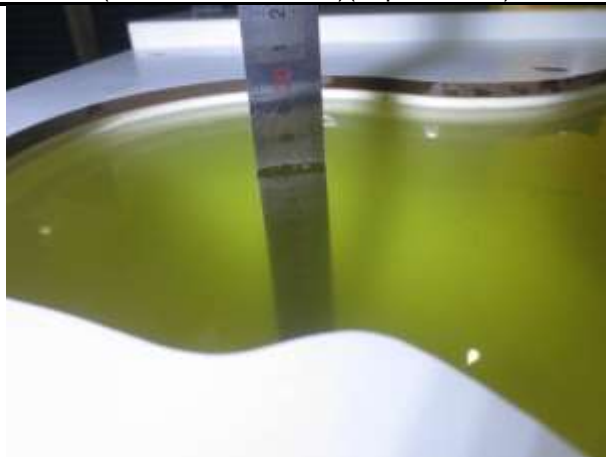


Fig. 9.3 Photo of Liquid Height for Head SAR (1700MHz~2000MHz)(depth>15cm)

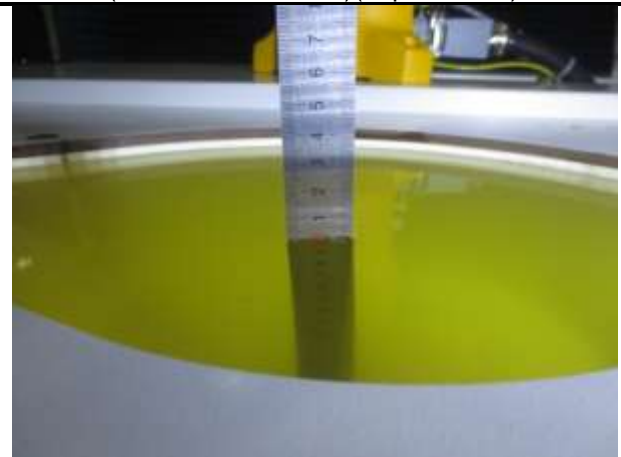


Fig. 9.4 Photo of Liquid Height for Body SAR (1700MHz~2000MHz)(depth>15cm)

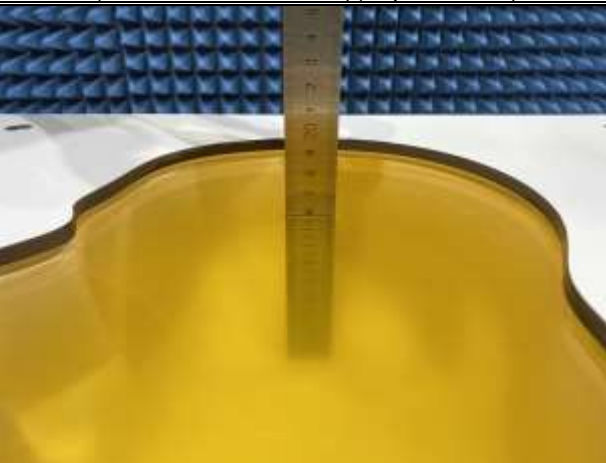


Fig. 9.5 Photo of Liquid Height for Head SAR (2000MHz~2600MHz)(depth>15cm)

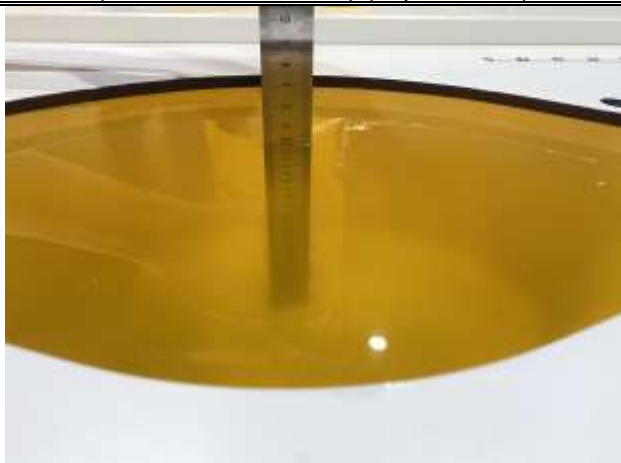


Fig. 9.6 Photo of Liquid Height for Body SAR (2000MHz~2600MHz)(depth>15cm)



Fig. 9.7 Photo of Liquid Height for Head SAR (5200MHz~5800MHz) (depth>15cm)



Fig. 9.8 Photo of Liquid Height for Body SAR (5200MHz~5800MHz) (depth>15cm)

The relative permittivity and conductivity of the tissue material should be within $\pm 5\%$ of the values given in the table below recommended by the FCC OET 65 supplement C and RSS 102 Issue 5.

Target Frequency (MHz)	ϵ_r	σ (S/m)
150	52.3	0.76
300	45.3	0.87
450	43.5	0.87
835	41.5	0.90
900	41.5	0.97
915	41.5	0.98
1450	40.5	1.20
1610	40.3	1.29
1800-2000	40.0	1.40
2450	39.2	1.80
3000	38.5	2.40
5800	35.3	5.27

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

The dielectric parameters of liquids were verified prior to the SAR evaluation using a Speag Dielectric Probe Kit and an Agilent Network Analyzer.

The following table shows the measuring results for simulating liquid.

Frequency (MHz)	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target(σ)	Permittivity Target(ϵ_r)	Delta (σ)%	Delta (ϵ_r)%	Limit (%)	Date (mm/dd/yy)
835	22.3	0.92	41.53	0.90	41.5	2.22	0.07	±5	01.10.2021
1800	21.7	1.37	39.20	1.40	40.0	-2.14	-2.00	±5	01.13.2021
1900	21.7	1.43	38.95	1.40	40.0	2.14	-2.62	±5	01.13.2021
2450	22.1	1.88	38.84	1.80	39.2	4.44	-0.92	±5	01.22.2021
2600	22.1	2.02	38.18	1.96	39.0	3.06	-2.10	±5	01.22.2021
5200	21.5	4.50	35.88	4.67	35.96	-3.64	-0.22	±5	01.18.2021
5800	21.5	5.19	34.35	5.27	35.3	-1.52	-2.69	±5	01.18.2021

10 SAR System Verification

Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. System validation kit includes a dipole, tripod holder to fix it underneath the flat phantom and a corresponding distance holder.

➤ **Purpose of System Performance check**

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

➤ **System Setup**

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:

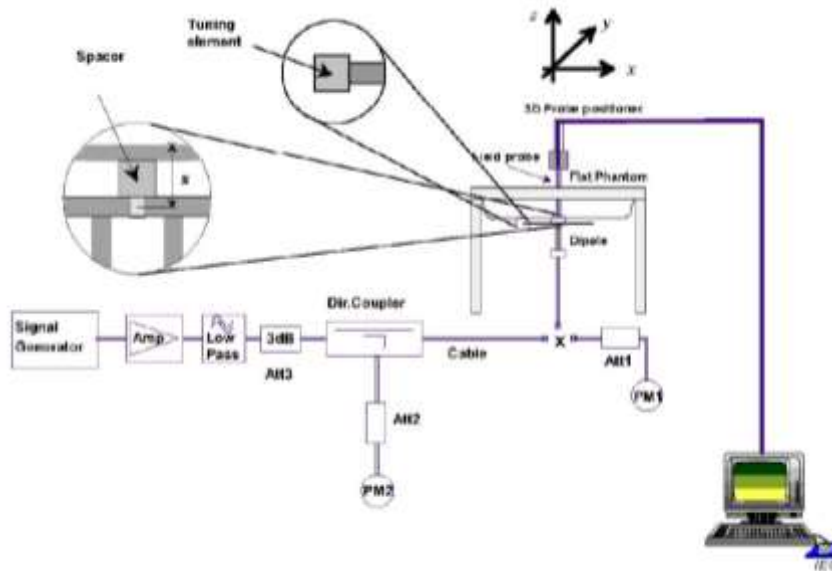


Fig.10.1 System Verification Setup Diagram

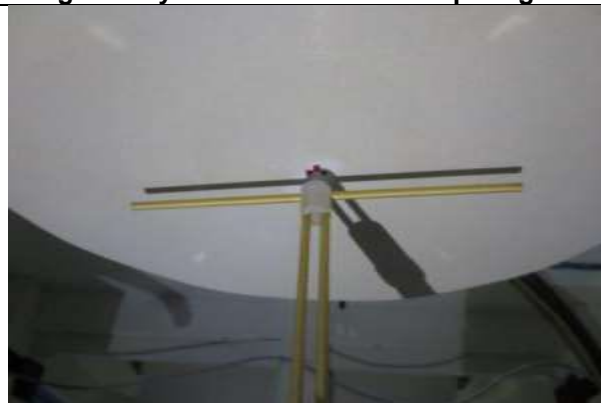


Fig.10.2 Photo of Dipole setup

➤

➤ **System Verification Results**

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10%. The table as below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix C of this report.

Date (mm/dd/yy)	Frequency (MHz)	Power fed onto dipole (mW)	Measured 1g SAR (W/kg)	Normalized to 1W 1g SAR (W/kg)	1W Target 1g SAR (W/kg)	Deviation (%)
01.10.2021	835	80	0.791	9.89	9.49	4.21
01.13.2021	1800	40	1.52	38.0	38.76	-1.96
01.13.2021	1900	40	1.61	40.25	39.4	2.16
01.22.2021	2450	40	2.14	53.5	52.6	1.71
01.22.2021	2600	40	2.18	54.5	56.3	-3.20
01.18.2021	5200	80	6.28	78.5	79.90	-1.75
01.18.2021	5800	80	4.67	80.88	79.40	1.86

11 EUT Testing Position

This EUT was tested in nine different positions. They are right cheek/right tilted/left cheek/left tilted for head, Front/Back/Right Side/Top Side of the EUT with phantom 10 mm gap, as illustrated below, please refer to Appendix B for the test setup photos.

11.1 Handset Reference Points

- The vertical centreline passes through two points on the front side of the handset – the midpoint of the width w_t of the handset at the level of the acoustic output, and the midpoint of the width w_b of the bottom of the handset.
- The horizontal line is perpendicular to the vertical centreline and passes the center of the acoustic output. The horizontal line is also tangential to the handset at point A.
- The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centreline is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.



Fig.11.1 Illustration for Front, Back and Side of SAM Phantom

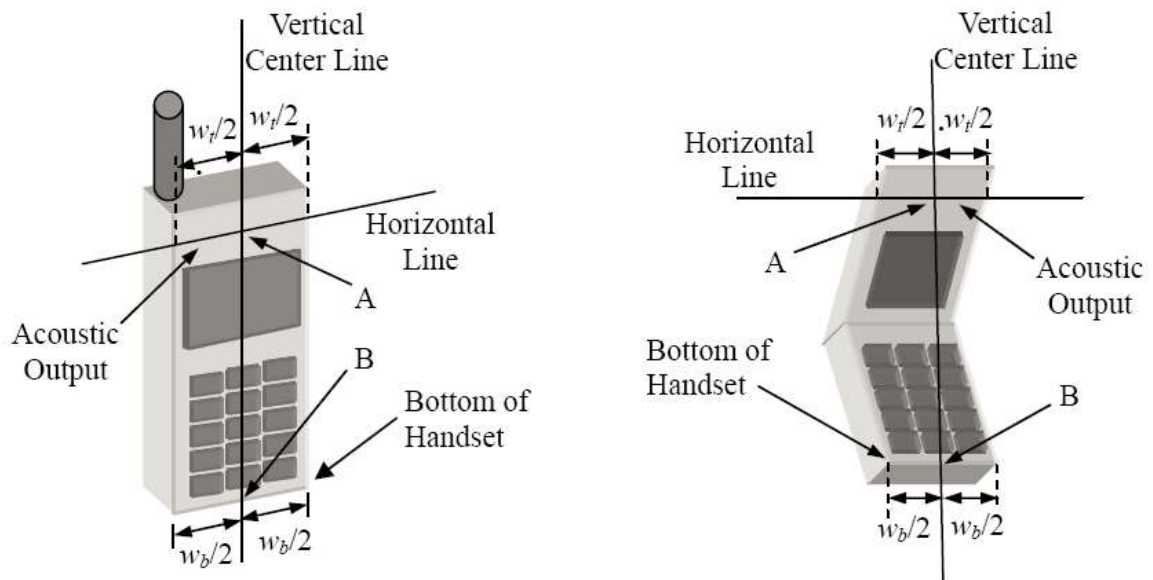


Fig. 11.2 Illustration for Handset Vertical and Horizontal Reference Lines

11.2 Positioning for Cheek / Touch

- To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M: Mouth, RE: Right Ear and LE: Left Ear) and align the center of the ear piece with the line RE-LE.
- To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see below figure)



Fig. 11.3 Illustration for Cheek Position

11.3 Positioning for Ear / 15° Tilt

- To position the device in the “cheek” position described above.
- While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost (see figure below).



Fig.11.4 Illustration for Tilted Position

11.4 SAR Evaluations near the Mouth/Jaw Regions of the SAM Phantom

Antennas located near the bottom of a phone may require SAR measurements around the mouth and jaw regions of the SAM head phantom. This typically applies to clam-shell style phones that are generally longer in the unfolded normal use positions or to certain older style long rectangular phones.

Under these circumstances, the following procedures apply, adopted from the FCC guidance on SAR handsets document FCC KDB Publication 648474 D04v01r03. The SAR required in these regions of SAM should be measured using a flat phantom. The phone should be positioned with a separation distance of 4 mm between the ear reference point (ERP) and the outer surface of the flat phantom shell. While maintaining this distance at the ERP location, the low (bottom) edge of the phone should be lowered from the phantom to establish the same separation distance between the peak SAR locations identified by the truncated partial SAR distribution measured with the SAM phantom. The distance from the peak SAR location to the phone is determined by the straight line passing perpendicularly through the phantom surface. When it is not feasible to maintain 4 mm separation at the ERP while also establishing the required separation at the peak SAR location, the top edge of the phone will be allowed to touch the phantom with a separation < 4 mm at the ERP. The phone should not be tilted to the left or right while placed in this inclined position to the flat phantom.

11.5 Body Worn Accessory Configurations

- To position the device parallel to the phantom surface with either keypad up or down.
- To adjust the device parallel to the flat phantom.
- To adjust the distance between the device surface and the flat phantom to 10 mm or holster surface and the flat phantom to 0 mm.

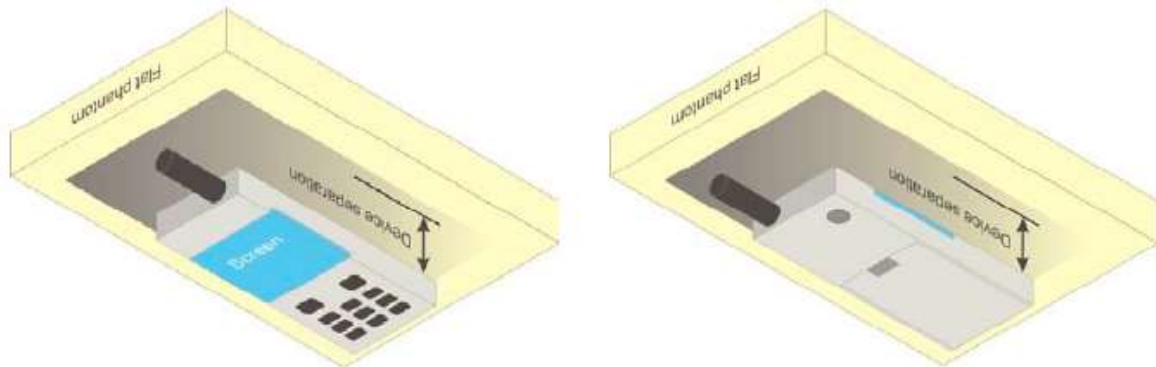


Fig.11.5 Illustration for Body Worn Position

11.6 Wireless Router (Hotspot) Configurations

Some battery-operated handsets have the capability to transmit and receive internet connectivity through simultaneous transmission of WIFI in conjunction with a separate licensed transmitter. The FCC has provided guidance in KDB Publication 941225 D06 where SAR test considerations for handsets ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) are based on a composite test separation distance of 10 mm from the front, back and edges of the device with antennas 2.5 cm or closer to the edge of the device, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions. Therefore, SAR must be evaluated for each frequency transmission and mode separately and summed with the WIFI transmitter according to KDB 648474 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal.

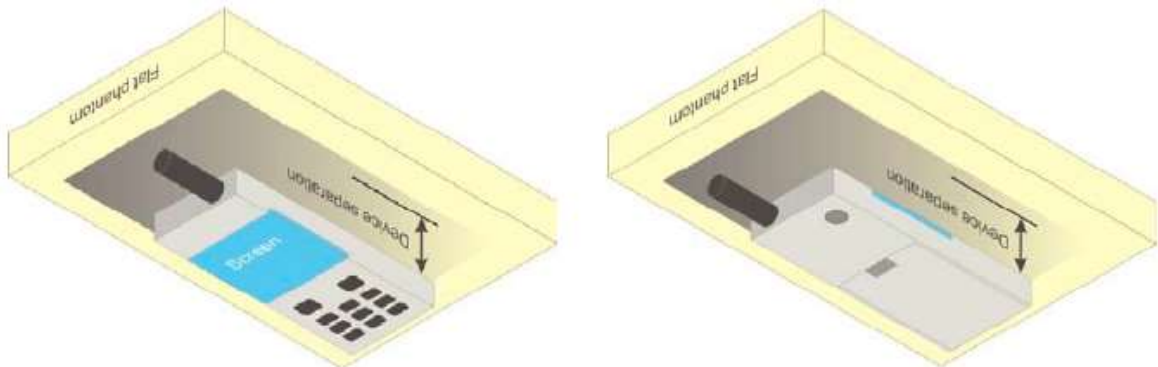


Fig.11.6 Illustration for Hotspot Position

12 Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

- For WWAN power measurement, use base station simulator to configure EUT WWAN transition in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
- Read the WWAN RF power level from the base station simulator.
- For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band.
- Connect EUT RF port through RF cable to the power meter or spectrum analyzer, and measure WLAN/BT output power.

<Conducted power measurement>

- Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
- Place the EUT in positions as Appendix B demonstrates.
- Set scan area, grid size and other setting on the DASY software.
- Measure SAR results for the highest power channel on each testing position.
- Find out the largest SAR result on these testing positions of each band.
- Measure SAR results for other channels in worst SAR testing position if the Reported SAR or highest power channel is larger than 0.8 W/kg.

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- Power reference measurement
- Area scan
- Zoom scan
- Power drift measurement

12.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a “cube” measurement. The measured volume must include the 1g and 10 g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- Extraction of the measured data (grid and values) from the Zoom Scan.
- Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters).
- Generation of a high-resolution mesh within the measured volume.
- Interpolation of all measured values from the measurement grid to the high-resolution grid
- Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- Calculation of the averaged SAR within masses of 1g and 10g.

12.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurement are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

12.3 Area & Zoom Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10g. Area scan and zoom scan resolution setting follows KDB 865664 D01v01r04 quoted below.

		≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface		5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location		$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: $\Delta x_{Area}, \Delta y_{Area}$		≤ 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 \leq the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: $\Delta x_{Zoom}, \Delta y_{Zoom}$		≤ 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
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$
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 <u>reported</u> SAR from the <u>area scan based 1-g SAR estimation</u> 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.			

12.4 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD post-processor scan combine and subsequently superpose these measurement data to calculating the multiband SAR.

12.5 SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1g and 10g cubes, the extrapolation distance should not be larger than 5 mm.

12.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.

13 Conducted RF Output Power

13.1 GSM Conducted Power

Band: GSM 850 Channel	Burst Average Power (dBm)			Frame-Average Power(dBm)		
	128	190	251	128	190	251
Frequency (MHz)	824.2	836.6	848.8	824.2	836.6	848.8
GSM (GMSK, Voice)	32.93	32.97	32.53	23.90	23.94	23.50
GPRS (GMSK, 1 TX slot)	32.89	32.96	32.51	23.86	23.93	23.48
GPRS (GMSK, 2 TX slots)	31.97	31.99	31.51	25.95	25.97	25.49
GPRS (GMSK, 3 TX slots)	29.94	29.91	29.96	25.68	25.65	25.70
GPRS (GMSK, 4 TX slots)	28.78	28.76	28.83	25.77	25.75	25.82
EGPRS (8PSK, 1 TX slot)	27.79	27.62	27.37	18.76	18.59	18.34
EGPRS (8PSK, 2 TX slots)	26.59	26.44	26.23	20.57	20.42	20.21
EGPRS (8PSK, 3 TX slots)	24.38	24.19	24.00	20.12	19.93	19.74
EGPRS (8PSK, 4 TX slots)	22.99	22.80	22.52	19.98	19.79	19.51

Remark:

- The frame-averaged power is linearly reported the maximum burst averaged power over 8 time slots. The calculated method are shown as below:
 The duty cycle “x” of different time slots as below:
 1 TX slot is 1/8, 2 TX slots is 2/8, 3 TX slots is 3/8 and 4 TX slots is 4/8
 Based on the calculation formula:
 Frame-averaged power = Burst averaged power + 10 log (x)
 So,
 Frame-averaged power (1 TX slot) = Burst averaged power (1 TX slot)– 9.03
 Frame-averaged power (2 TX slots) = Burst averaged power (2 TX slots)– 6.02
 Frame-averaged power (3 TX slots) = Burst averaged power (3 TX slots)– 4.26
 Frame-averaged power (4 TX slots) = Burst averaged power (4 TX slots) – 3.01
- CS1 coding scheme was used in GPRS conducted power measurements and SAR testing, MCS5 coding scheme was used in EGPRS conducted power measurements and SAR testing (if necessary).

Note:

- For Head SAR testing, GSM Voice mode should be evaluated, therefore the EUT was set in GSM 850 Voice mode.
- For Body worn SAR testing, GSM Voice mode should be evaluated, therefore the EUT was set in GSM 850 Voice mode.
- For Hotspot mode SAR testing, GPRS and EGPRS mode should be evaluated, therefore the EUT was set in GPRS 2 TX slots mode due to the highest frame-averaged power.
- Per KDB447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
- The EUT do not support DTM and VoIP function.

Band: PCS 1900 Channel	Burst Average Power (dBm)			Frame-Average Power(dBm)		
	512	661	810	512	661	810
Frequency (MHz)	1850.2	1880.0	1909.8	1850.2	1880.0	1909.8
GSM (GMSK, Voice)	29.98	30.03	30.02	20.95	21.00	20.99
GPRS (GMSK, 1 TX slot)	29.97	30.02	30.01	20.94	20.99	20.98
GPRS (GMSK, 2 TX slots)	29.03	29.10	29.08	23.01	23.08	23.06
GPRS (GMSK, 3 TX slots)	27.00	27.07	27.06	22.74	22.81	22.80
GPRS (GMSK, 4 TX slots)	25.88	25.93	25.93	22.87	22.92	22.92
EGPRS (8PSK, 1 TX slot)	26.91	26.63	26.87	17.88	17.60	17.84
EGPRS (8PSK, 2 TX slots)	25.87	25.60	25.80	19.85	19.58	19.78
EGPRS (8PSK, 3 TX slots)	23.94	23.64	23.86	19.68	19.38	19.60
EGPRS (8PSK, 4 TX slots)	22.97	22.70	22.91	19.96	19.69	19.90

Remark:

- The frame-averaged power is linearly reported the maximum burst averaged power over 8 time slots. The calculated method are shown as below:
The duty cycle "x" of different time slots as below:
1 TX slot is 1/8, 2 TX slots is 2/8, 3 TX slots is 3/8 and 4 TX slots is 4/8
Based on the calculation formula:
Frame-averaged power = Burst averaged power + 10 log (x)
So,
Frame-averaged power (1 TX slot) = Burst averaged power (1 TX slot)– 9.03
Frame-averaged power (2 TX slots) = Burst averaged power (2 TX slots)– 6.02
Frame-averaged power (3 TX slots) = Burst averaged power (3 TX slots)– 4.26
Frame-averaged power (4 TX slots) = Burst averaged power (4 TX slots) – 3.01
- CS1 coding scheme was used in GPRS conducted power measurements and SAR testing, MCS5 coding scheme was used in EGPRS conducted power measurements and SAR testing (if necessary).

Note:

- For Head SAR testing, GSM Voice mode should be evaluated, therefore the EUT was set in GSM 1900 Voice mode.
- For Body worn SAR testing, GSM Voice mode should be evaluated, therefore the EUT was set in GSM Voice 1900 mode.
- For Hotspot mode SAR testing, GPRS and EGPRS mode should be evaluated, therefore the EUT was set in GPRS 2 TX slots mode due to the highest frame-averaged power.
- Per KDB447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
- The EUT do not support DTM and VoIP function.

13.2 WCDMA Conducted Power

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification. A summary of these settings are illustrated below:

HSDPA Setup Configuration:

- a. The EUT was connected to Base Station Rohde & Schwarz CMU200 referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
 - i. Set Gain Factors (β_c and β_d) and parameters were set according to each
 - ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
 - iii. Set RMC 12.2kbps + HSDPA mode.
 - iv. Set Cell Power = -86 dBm
 - v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
 - vi. Select HSDPA Uplink Parameters
 - vii. Set Delta ACK, Delta NACK and Delta CQI = 8
 - viii. Set Ack-Nack Repetition Factor to 3
 - ix. Set CQI Feedback Cycle (k) to 4 ms
 - x. Set CQI Repetition Factor to 2
 - xi. Power Ctrl Mode = All Up bits
- d. The transmitted maximum output power was recorded.

Table 1

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

Note 1: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$
 Note 2: CM = 1 for $\beta_c/\beta_d = 12/15, \beta_{hs}/\beta_c = 24/15$.
 Note 3: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$.

HSDPA Sub-test setup configuration

HSUPA Setup Configuration:

- a. The EUT was connected to Base Station Rohde & Schwarz CMU200 referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting * :
 - i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
 - ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
 - iii. Set Cell Power = -86 dBm
 - iv. Set Channel Type = 12.2k + HSPA
 - v. Set UE Target Power
 - vi. Power Ctrl Mode= Alternating bits
 - vii. Set and observe the E-TFCI
 - viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
- d. The transmitted maximum output power was recorded.

Table 2

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

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

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

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

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

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

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

HSUPA Sub-test setup configuration

WCDMA Conducted Power:

WCDMA Average power (dBm)			
Band	WCDMA Band V		
Channel	4132	4183	4233
Frequency (MHz)	826.4	836.6	846.6
AMR 12.2 kbps	24.18	24.13	24.12
RMC 12.2 kbps	24.22	24.18	24.21
HSDPA Sub-test 1	23.28	23.17	23.21
HSDPA Sub-test 2	22.76	22.82	22.85
HSDPA Sub-test 3	21.27	21.22	21.25
HSDPA Sub-test 4	21.41	21.23	21.35
HSUPA Sub-test 1	24.12	24.09	24.11
HSUPA Sub-test 2	23.76	23.68	23.77
HSUPA Sub-test 3	21.76	21.73	21.74
HSUPA Sub-test 4	24.17	24.12	24.03
HSUPA Sub-test 5	22.75	22.65	22.78

WCDMA Average power (dBm)			
Band	WCDMA Band II		
Channel	9262	9400	9538
Frequency (MHz)	1852.4	1880.0	1907.6
AMR 12.2 kbps	24.02	24.12	24.18
RMC 12.2 kbps	24.07	24.19	24.26
HSDPA Sub-test 1	23.11	23.16	23.24
HSDPA Sub-test 2	22.69	22.67	22.79
HSDPA Sub-test 3	21.11	21.22	21.41
HSDPA Sub-test 4	21.18	21.26	21.32
HSUPA Sub-test 1	24.00	24.08	24.15
HSUPA Sub-test 2	23.55	23.59	23.75
HSUPA Sub-test 3	21.48	21.72	21.65
HSUPA Sub-test 4	24.01	24.09	24.16
HSUPA Sub-test 5	22.48	22.52	22.65

Note:

1. Applying the subtest setup in Table C.11.1.3 of 3GPP TS 34.121-1
2. Per KDB 941225 D01, RMC 12.2kbps mode is used to evaluate SAR due the highest output power. If AMR 12.2 kbps power is < 0.25dB higher than RMC 12.2kbps, SAR tests with AMR 12.2 kbps can be excluded.
3. AMR, HSDPA RF power will not be larger than RMC 12.2kbps, detailed information is included in Tune-up Procure exhibit.

13.3 LTE Conducted Power

13.3.1 Largest channel bandwidth standalone SAR test requirements

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 among 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.⁸ 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.

QPSK with 50% RB allocation

The procedures required for 1 RB allocation in section 4.2.1 are applied to measure the SAR for QPSK with 50% RB allocation.⁹

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 sections 4.2.1 and 4.2.2 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.

Higher order modulations

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in sections 4.2.1, 5.2.2 and 4.2.3 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.

13.3.2 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 4.2 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. The equivalent channel configuration for the RB allocation, RB offset and modulation etc. is determined for the smaller channel bandwidth according to the same number of RB allocated in the largest channel bandwidth. For example, 50 RB in 10 MHz channel bandwidth does not apply to 5 MHz channel bandwidth; therefore, this cannot be tested in the smaller channel bandwidth. However, 50% RB allocation in 10 MHz channel bandwidth is equivalent to 100% RB allocation in 5 MHz channel bandwidth; therefore, these are the equivalent configurations to be compared to determine the specific channel and configuration in the smaller channel bandwidth that need SAR testing.

13.3.3 TDD LTE configuration setup for SAR measurement

According to KDB 941225 D05v02r03 and April 2013 TCB workshop slides, SAR must be tested with a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by 3GPP.

- see 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations
- “special subframe S” contains both uplink and downlink transmissions and must be taken into consideration to determine the transmission duty factor
 - according to the worst case uplink and downlink cyclic prefix requirements for UpPTS to determine the highest SAR test duty factor

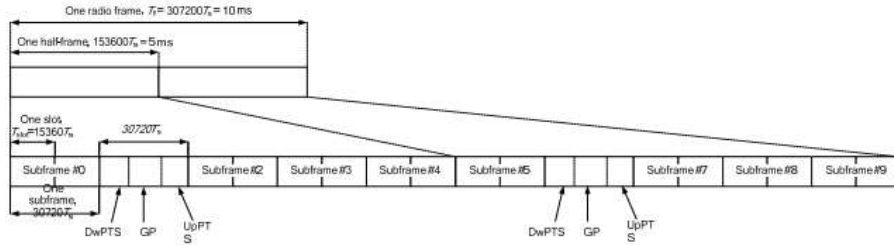


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity)

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

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

Per 3GPP 36.211 section 4.2, each radio frame of length $T_f=37200 \cdot T_s = 10$ ms consists of two half-frames of length $153600 \cdot T_s = 5$ ms each. Each half-frame consists of five subframes of length $30720 \cdot T_s = 1$ ms. So, the uplink duty factor in special subframe as below:

Special Subframe configuration	Normal cyclic prefix in downlink		Extended cyclic prefix in downlink	
	Duty factor of Uplink		Duty factor of Uplink	
	Normal cyclic prefix in uplink	Extended cyclic prefix in uplink	Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	7.14%	8.33%	7.14%	8.33%
1	7.14%	8.33%	7.14%	8.33%
2	7.14%	8.33%	7.14%	8.33%
3	7.14%	8.33%	7.14%	8.33%
4	7.14%	8.33%	14.27%	16.67%
5	14.27%	16.67%	14.27%	16.67%
6	14.27%	16.67%	14.27%	16.67%
7	14.27%	16.67%	14.27%	16.67%
8	14.27%	16.67%	/	/
9	14.27%	16.67%	/	/

Table 4.2-2: Uplink-downlink configurations

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

According to above table:

1. The highest duty factor is configuration 0;
2. The duty factor of uplink in one half-frame with normal cyclic prefix is: $(3\text{ms} + 0.143\text{ms})/5\text{ms}=62.86\%$;
3. The duty factor of uplink in one half-frame with extended cyclic prefix is: $(3\text{ms} + 0.167\text{ms})/5\text{ms}=63.34\%$;
4. For purpose to get the worst case SAR test duty factor, the duty factor of normal cyclic prefix in uplink scaled-up to the extended cyclic prefix in uplink, the scaling factor is $63.34\%/62.86\%=1.008$, and the scaling factor will be taken into the final measured SAR.

LTE Band 2 part

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18607	18900	19193
					1850.7MHz	1880.0MHz	1909.3MHz
Band 2	1.4	QPSK	1	0	23.03	23.01	23.05
			1	2	23.10	23.12	23.13
			1	5	23.02	23.00	23.03
			3	0	22.15	22.17	22.12
			3	1	22.14	22.15	22.16
			3	2	22.12	22.16	22.15
			6	0	22.10	22.11	22.12
		16QAM	1	0	22.05	22.04	22.03
			1	2	22.12	22.14	22.11
			1	5	22.06	22.03	22.02
			3	0	21.25	21.28	21.23
			3	1	21.23	21.26	21.24
			3	2	21.20	21.27	21.25
			6	0	21.06	21.08	21.10

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18615	18900	19185
					1851.5MHz	1880.0MHz	1908.5MHz
Band 2	3	QPSK	1	0	23.03	23.08	23.05
			1	7	23.02	23.00	23.03
			1	14	23.03	23.04	23.06
			8	0	22.06	22.07	22.05
			8	4	22.05	22.06	22.02
			8	7	22.03	22.08	22.04
			15	0	22.06	22.07	22.05
		16QAM	1	0	22.63	22.66	22.62
			1	7	22.55	22.57	22.53
			1	14	22.59	22.61	22.58
			8	0	21.22	21.25	21.21
			8	4	21.23	21.24	21.25
			8	7	21.25	21.23	21.21
			15	0	21.11	21.12	21.13

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18625	18900	19175
					1852.5MHz	1880.0MHz	1907.5MHz
Band 2	5	QPSK	1	0	23.03	23.05	23.04
			1	12	23.05	23.04	23.06
			1	24	23.04	23.02	23.05
			12	0	22.12	22.13	22.10
			12	6	22.13	22.10	22.11
			12	11	22.10	22.12	22.13
			25	0	22.08	22.09	22.10
		16QAM	1	0	23.02	23.04	23.05
			1	12	23.03	23.02	23.04
			1	24	23.01	23.03	23.03
			12	0	22.05	22.12	22.10
			12	6	22.08	22.09	22.06
			12	11	22.07	22.08	22.09
			25	0	22.05	22.07	22.06

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18650	18900	19150
					1855.0MHz	1880.0MHz	1905.0MHz
Band 2	10	QPSK	1	0	23.02	23.05	23.06
			1	24	23.10	23.13	23.11
			1	49	23.06	23.05	23.02
			25	0	22.22	22.24	22.23
			25	12	22.15	22.16	22.14
			25	24	22.12	22.14	22.13
			50	0	22.14	22.15	22.16
		16QAM	1	0	22.64	22.65	22.66
			1	24	22.71	22.74	22.75
			1	49	22.66	22.67	22.63
			25	0	21.23	21.24	21.25
			25	12	21.20	21.19	21.22
			25	24	21.18	21.17	21.15
			50	0	21.19	21.20	21.18

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18675	18900	19125
					1857.5MHz	1880.0MHz	1902.5MHz
Band 2	15	QPSK	1	0	23.03	23.01	23.02
			1	37	23.02	23.00	23.06
			1	74	23.04	23.01	23.03
			36	0	22.22	22.24	22.21
			36	16	22.12	22.16	22.19
			36	35	22.14	22.15	22.13
			75	0	22.15	22.17	22.16
		16QAM	1	0	22.54	22.55	22.58
			1	37	22.53	22.57	22.56
			1	74	22.60	22.59	22.57
			36	0	21.19	21.18	21.20
			36	16	21.15	21.13	21.16
			36	35	21.12	21.10	21.13
			75	0	21.13	21.14	21.15

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18700	18900	19100
					1860.0MHz	1880.0MHz	1900.0MHz
Band 2	20	QPSK	1	0	22.96	22.92	22.95
			1	49	23.12	23.14	23.10
			1	99	22.96	22.94	22.95
			50	0	22.25	22.26	22.21
			50	24	22.16	22.18	22.15
			50	49	22.15	22.14	22.16
			100	0	22.16	22.15	22.14
		16QAM	1	0	22.21	22.23	22.26
			1	49	22.49	22.51	22.52
			1	99	22.32	22.34	22.35
			50	0	21.20	21.18	21.21
			50	24	21.16	21.13	21.15
			50	49	21.10	21.08	21.12
			100	0	21.14	21.15	21.13

LTE Band 4 part

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					19957	20175	20393
					1710.7MHz	1732.5MHz	1754.3MHz
Band 4	1.4	QPSK	1	0	23.02	23.01	23.03
			1	2	23.12	23.11	23.09
			1	5	23.03	23.00	23.01
			3	0	22.02	22.05	22.02
			3	1	22.05	22.04	22.03
			3	2	22.04	22.06	22.05
			6	0	22.02	22.03	22.01
		16QAM	1	0	22.01	22.00	22.03
			1	2	22.09	22.12	22.10
			1	5	22.02	22.01	22.04
			3	0	21.21	21.23	21.25
			3	1	21.20	21.22	21.23
			3	2	21.24	21.21	21.23
			6	0	21.04	21.06	21.05

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					19965	20175	20385
					1711.5MHz	1732.5MHz	1753.5MHz
Band 4	3	QPSK	1	0	23.03	23.04	23.02
			1	7	23.02	23.00	23.01
			1	14	23.00	23.01	23.02
			8	0	22.02	22.01	22.03
			8	4	22.03	22.02	22.04
			8	7	22.01	22.03	22.02
			15	0	22.02	22.00	22.01
		16QAM	1	0	22.55	22.58	22.57
			1	7	22.48	22.50	22.52
			1	14	22.50	22.52	22.53
			8	0	21.13	21.16	21.14
			8	4	21.16	21.18	21.17
			8	7	21.15	21.17	21.16
			15	0	21.07	21.08	21.06

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					19975	20175	20375
					1712.5MHz	1732.5MHz	1752.5MHz
Band 4	5	QPSK	1	0	23.02	23.01	23.05
			1	12	23.03	23.02	23.04
			1	24	23.02	23.00	23.01
			12	0	21.97	21.98	21.99
			12	6	21.99	22.01	21.97
			12	11	21.95	21.99	21.98
			25	0	21.96	21.97	21.96
		16QAM	1	0	21.95	21.94	21.96
			1	12	21.93	21.90	21.98
			1	24	21.89	21.88	21.85
			12	0	20.96	20.95	20.97
			12	6	20.94	20.96	20.93
			12	11	20.98	20.97	20.95
			25	0	21.02	21.03	21.04

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20000	20175	20350
					1715.0MHz	1732.5MHz	1750.0MHz
Band 4	10	QPSK	1	0	23.04	23.05	23.06
			1	24	23.13	23.11	23.16
			1	49	23.15	23.13	23.14
			25	0	22.01	22.00	22.03
			25	12	22.02	22.03	22.05
			25	24	22.03	22.02	22.04
			50	0	22.02	22.01	22.03
		16QAM	1	0	22.63	22.64	22.68
			1	24	22.61	22.63	22.65
			1	49	22.50	22.52	22.55
			25	0	21.05	21.06	21.08
			25	12	21.07	21.08	21.05
			25	24	21.08	21.09	21.06
			50	0	21.02	21.03	21.05

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20025	20175	20325
					1717.5MHz	1732.5MHz	1747.5MHz
Band 4	15	QPSK	1	0	23.04	23.02	23.05
			1	37	23.02	23.00	23.03
			1	74	23.04	23.05	23.01
			36	0	22.07	22.08	22.10
			36	16	22.04	22.05	22.06
			36	35	22.03	22.02	22.05
			75	0	22.02	22.03	22.04
		16QAM	1	0	22.61	22.62	22.65
			1	37	22.55	22.57	22.58
			1	74	22.53	22.50	22.54
			36	0	21.12	21.15	21.13
			36	16	21.12	21.10	21.15
			36	35	21.10	21.08	21.12
			75	0	21.07	21.06	21.08

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20050	20175	20300
					1720.0MHz	1732.5MHz	1745.0MHz
Band 4	20	QPSK	1	0	22.85	22.89	22.90
			1	49	23.10	23.14	23.08
			1	99	22.95	22.93	22.94
			50	0	22.01	22.03	22.05
			50	24	22.05	22.06	22.01
			50	49	22.03	22.02	22.05
			100	0	22.02	22.05	22.04
		16QAM	1	0	22.50	22.51	22.49
			1	49	22.61	22.64	22.62
			1	99	22.42	22.40	22.44
			50	0	21.03	21.05	21.06
			50	24	21.12	21.14	21.10
			50	49	21.01	21.02	21.03
			100	0	21.04	21.03	21.05

LTE Band 5 part:

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20407	20525	20643
					824.7MHz	836.5MHz	848.3MHz
Band 5	1.4	QPSK	1	0	23.25	23.26	23.24
			1	2	23.42	23.43	23.45
			1	5	23.26	23.29	23.27
			3	0	22.35	22.37	22.33
			3	1	22.32	22.35	22.36
			3	2	22.40	22.39	22.38
		16QAM	6	0	22.38	22.37	22.37
			1	0	22.32	22.34	22.35
			1	2	22.56	22.54	22.57
			1	5	22.40	22.38	22.39
			3	0	21.51	21.52	21.55
			3	1	21.49	21.50	21.51
			3	2	21.45	21.46	21.46
			6	0	21.33	21.35	21.36

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20415	20525	20635
					825.5MHz	836.5MHz	847.5MHz
Band 5	3	QPSK	1	0	23.44	23.45	23.47
			1	7	23.32	23.34	23.35
			1	14	23.40	23.39	23.41
			8	0	22.45	22.46	22.48
			8	4	22.44	22.45	22.42
			8	7	22.46	22.49	22.47
			15	0	22.50	22.51	22.52
		16QAM	1	0	23.00	23.02	23.01
			1	7	22.95	22.93	22.96
			1	14	22.99	22.98	22.95
			8	0	21.63	21.65	21.62
			8	4	21.64	21.67	21.63
			8	7	21.65	21.66	21.64
			15	0	21.58	21.56	21.57

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20425	20525	20625
					826.5MHz	836.5MHz	846.5MHz
Band 5	5	QPSK	1	0	23.42	23.40	23.43
			1	12	23.44	23.41	23.46
			1	24	23.43	23.41	23.45
			12	0	22.45	22.48	22.47
			12	6	22.48	22.46	22.45
			12	11	22.49	22.50	22.48
			25	0	22.45	22.47	22.46
		16QAM	1	0	22.32	22.35	22.33
			1	12	22.35	22.37	22.39
			1	24	22.34	22.36	22.32
			12	0	21.44	21.45	21.42
			12	6	21.42	21.46	21.45
			12	11	21.48	21.49	21.47
			25	0	21.53	21.55	21.54

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20450	20525	20600
					829MHz	836.5MHz	844MHz
Band 5	10	QPSK	1	0	23.33	23.34	23.36
			1	24	23.50	23.49	23.51
			1	49	23.42	23.44	23.45
			25	0	22.45	22.49	22.48
			25	12	22.48	22.50	22.52
			25	24	22.47	22.51	22.50
			50	0	22.46	22.48	22.51
		16QAM	1	0	22.95	22.96	22.97
			1	24	23.05	23.10	23.03
			1	49	23.01	23.02	23.00
			25	0	21.58	21.61	21.55
			25	12	21.56	21.58	21.57
			25	24	21.60	21.59	21.58
			50	0	21.54	21.53	21.55

LTE Band 7 part:

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20775	21100	21425
					2502.5MHz	2535.0MHz	2567.5MHz
Band 7	5	QPSK	1	0	22.65	22.67	22.63
			1	12	22.55	22.63	22.59
			1	24	22.68	22.69	22.64
			12	0	21.66	21.67	21.65
			12	6	21.64	21.65	21.63
			12	11	21.65	21.64	21.61
			25	0	21.66	21.67	21.64
		16QAM	1	0	21.72	21.73	21.75
			1	12	21.63	21.65	21.66
			1	24	21.66	21.68	21.62
			12	0	20.71	20.73	20.75
			12	6	20.68	20.70	20.77
			12	11	20.73	20.72	20.71
			25	0	20.79	20.81	20.78

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20800	21100	21400
					2505.0MHz	2535.0MHz	2565.0MHz
Band 7	10	QPSK	1	0	22.66	22.65	22.68
			1	24	22.72	22.74	22.75
			1	49	22.62	22.65	22.66
			25	0	21.72	21.73	21.70
			25	12	21.70	21.71	21.73
			25	24	21.69	21.70	21.72
			50	0	21.70	21.71	21.69
		16QAM	1	0	22.13	22.15	22.11
			1	24	22.21	22.23	22.25
			1	49	22.11	22.13	22.15
			25	0	20.85	20.88	20.83
			25	12	20.81	20.85	20.82
			25	24	20.84	20.86	20.85
			50	0	20.81	20.83	20.84

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20825	21100	21375
					2507.5MHz	2535.0MHz	2562.5MHz
Band 7	15	QPSK	1	0	22.61	22.62	22.65
			1	37	22.62	22.63	22.64
			1	74	22.59	22.61	22.58
			36	0	21.75	21.78	21.79
			36	16	21.74	21.76	21.77
			36	35	21.76	21.75	21.78
			75	0	21.73	21.74	21.72
		16QAM	1	0	22.12	22.14	22.11
			1	37	22.13	22.11	22.12
			1	74	22.11	22.10	22.15
			36	0	20.79	20.81	20.82
			36	16	20.77	20.79	20.75
			36	35	20.75	20.74	20.77
			75	0	20.79	20.78	20.76

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20850	21100	21350
					2510.0MHz	2535.0MHz	2560.0MHz
Band 7	20	QPSK	1	0	22.54	22.53	22.55
			1	49	22.63	22.64	22.66
			1	99	22.51	22.52	22.54
			50	0	21.72	21.74	21.77
			50	24	21.71	21.72	21.73
			50	49	21.66	21.68	21.65
			100	0	21.65	21.67	21.66
		16QAM	1	0	21.72	21.75	21.73
			1	49	22.01	22.03	22.00
			1	99	21.74	21.76	21.77
			50	0	20.78	20.81	20.79
			50	24	20.77	20.79	20.75
			50	49	20.73	20.75	20.76
			100	0	20.79	20.81	20.77

LTE Band 38 part:

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					37775	38000	38225
					2572.5MHz	2595.0MHz	2617.5MHz
Band 38	5	QPSK	1	0	22.53	22.55	22.51
			1	12	22.55	22.54	22.52
			1	24	22.51	22.54	22.53
			12	0	20.56	20.57	20.54
			12	6	20.53	20.56	20.55
			12	11	20.58	20.59	20.56
			25	0	20.59	20.61	20.58
		16QAM	1	0	21.71	21.73	21.72
			1	12	21.75	21.77	21.73
			1	24	21.72	21.75	21.74
			12	0	20.55	20.58	20.59
			12	6	20.56	20.57	20.53
			12	11	20.57	20.56	20.51
			25	0	20.53	20.54	20.55

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					378000	38000	38200
					2575.0MHz	2595.0MHz	2615.0MHz
Band 38	10	QPSK	1	0	22.53	22.54	22.55
			1	24	22.71	22.72	22.75
			1	49	22.52	22.56	22.59
			25	0	21.53	21.54	21.56
			25	12	21.52	21.53	21.55
			25	24	21.54	21.55	21.51
			50	0	21.55	21.56	21.54
		16QAM	1	0	21.66	21.68	21.69
			1	24	21.78	21.80	21.81
			1	49	21.58	21.59	21.57
			25	0	20.66	20.65	20.63
			25	12	20.60	20.61	20.59
			25	24	20.61	20.63	20.65
			50	0	20.59	20.60	20.61

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					37825	38000	38175
					2577.5MHz	2595.0MHz	2612.5MHz
Band 38	15	QPSK	1	0	22.53	22.54	22.55
			1	37	22.51	22.52	22.53
			1	74	22.50	22.48	22.51
			36	0	21.59	21.60	21.62
			36	16	21.55	21.58	21.53
			36	35	21.58	21.59	21.56
			75	0	21.56	21.57	21.54
		16QAM	1	0	21.71	21.72	21.75
			1	37	21.50	21.47	21.49
			1	74	21.41	21.39	21.37
			36	0	20.55	20.58	20.52
			36	16	20.53	20.56	20.58
			36	35	20.56	20.59	20.55
			75	0	20.58	20.60	20.57

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					37850	38000	38150
					2580.0MHz	2595.0MHz	2610.0MHz
Band 38	20	QPSK	1	0	22.44	22.43	22.45
			1	49	22.68	22.70	22.72
			1	99	22.40	22.41	22.43
			50	0	21.52	21.53	21.56
			50	24	21.53	21.50	21.52
			50	49	21.55	21.52	21.50
			100	0	21.52	21.54	21.53
		16QAM	1	0	21.72	21.71	21.75
			1	49	21.95	21.99	21.93
			1	99	21.63	21.61	21.68
			50	0	20.60	20.61	20.62
			50	24	20.58	20.60	20.63
			50	49	20.57	20.58	20.56
			100	0	20.55	20.56	20.54

LTE Band 41 part:

LTE Band	Band width (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)				
					40065	40355	40640	40750	41215
					2537.5MHz	2566.5MHz	2595.0MHz	2624.0MHz	2652.5MHz
Band 41	5	QPSK	1	0	22.49	22.35	22.48	22.42	22.52
			1	12	22.51	22.42	22.54	22.39	22.56
			1	24	22.46	22.39	22.49	22.47	22.52
			12	0	21.54	21.32	21.55	21.39	21.56
			12	6	21.52	21.38	21.53	21.46	21.55
			12	11	21.54	21.28	21.52	21.41	21.54
		16QAM	25	0	21.55	21.30	21.56	21.44	21.56
			1	0	21.60	21.48	21.61	21.53	21.63
			1	12	21.63	21.42	21.64	21.42	21.61
			1	24	21.56	21.45	21.55	21.54	21.59
			12	0	20.55	20.41	20.58	20.43	20.52
			12	6	20.54	20.38	20.55	20.47	20.57
			12	11	20.53	20.46	20.56	20.42	20.56
			25	0	20.55	20.44	20.54	20.47	20.55

LTE Band	Band width (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)				
					40090	40365	40640	40915	41190
					2540.0MHz	2567.5MHz	2595.0MHz	2622.5MHz	2650.0MHz
Band 41	10	QPSK	1	0	22.52	22.48	22.54	22.53	22.55
			1	24	22.71	22.51	22.73	22.57	22.75
			1	49	22.55	22.53	22.54	22.49	22.52
			25	0	21.53	21.44	21.55	21.48	21.54
			25	12	21.54	21.41	21.53	21.43	21.55
			25	24	21.55	21.39	21.56	21.51	21.57
		16QAM	50	0	21.53	21.40	21.52	21.50	21.54
			1	0	21.66	21.59	21.64	21.57	21.63
			1	24	21.75	21.51	21.77	21.55	21.72
			1	49	21.64	21.60	21.63	21.46	21.61
			25	0	20.65	20.52	20.63	20.53	20.66
			25	12	20.61	20.48	20.62	20.45	20.65
			25	24	20.53	20.57	20.61	20.51	20.62
			50	0	20.54	20.50	20.56	20.48	20.57

LTE Band	Band width (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)				
					40115	40375	40640	40900	41165
					2542.5MHz	2568.5MHz	2595.0MHz	2673.5MHz	2647.5MHz
Band 41	15	QPSK	1	0	22.55	22.46	22.53	22.49	22.51
			1	37	22.51	22.38	22.52	22.50	22.53
			1	74	22.50	22.41	22.49	22.42	22.52
			36	0	21.49	21.50	21.50	21.47	21.53
			36	16	21.52	21.47	21.49	21.40	21.50
			36	35	21.53	21.42	21.51	21.44	21.52
			75	0	21.54	21.48	21.52	21.50	21.53
		16QAM	1	0	21.50	21.49	21.48	21.46	21.52
			1	37	21.46	21.51	21.50	21.49	21.49
			1	74	21.66	21.56	21.67	21.53	21.46
			36	0	20.50	20.48	20.51	20.51	20.52
			36	16	20.62	20.54	20.64	20.54	20.53
			36	35	20.53	20.51	20.54	20.48	20.55
			75	0	20.51	20.47	20.53	20.51	20.54

LTE Band	Band width (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)				
					40140	40390	40640	40890	41140
					2545.0MHz	2570.0MHz	2595.0MHz	2620.0MHz	2645.0MHz
Band 41	20	QPSK	1	0	22.49	22.46	22.47	22.42	22.50
			1	49	22.71	22.62	22.73	22.71	22.75
			1	99	22.50	22.42	22.44	22.41	22.46
			50	0	21.45	21.41	21.48	21.46	21.50
			50	24	21.48	21.47	21.50	21.50	21.52
			50	49	21.50	21.39	21.52	21.51	21.53
			100	0	21.53	21.49	21.54	21.52	21.51
		16QAM	1	0	21.71	21.68	21.73	21.70	21.75
			1	49	21.90	21.89	21.95	21.91	21.92
			1	99	21.75	21.70	21.71	21.68	21.73
			50	0	20.55	20.51	20.58	20.52	20.53
			50	24	20.57	20.49	20.56	20.51	20.55
			50	49	20.54	20.53	20.55	20.50	20.52
			100	0	20.55	20.51	20.56	20.52	20.54

Note:

1. Per KDB 447498 D01v05r02 section 4.1, 6), the required test channels number is 5 for LTE Band 41.

13.4 WLAN 2.4 GHz Band Conducted Power

Average Power (dBm)				
Channel	Frequency (MHz)	802.11 b	802.11 g	802.11n (HT20)
CH 01	2412	15.68	13.60	13.50
CH 06	2437	15.17	13.21	13.16
CH 11	2462	15.33	13.54	13.15

Average Power (dBm)		
Channel	Frequency (MHz)	802.11n (HT40)
CH 03	2422	13.00
CH 06	2437	12.65
CH 09	2452	12.50

Note:

- Per KDB 447498 D01v06, the 1-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, where
 - f(GHz) is the RF channel transmit frequency in GHz
 - Power and distance are rounded to the nearest mW and mm before calculation
 - The result is rounded to one decimal place for comparison

Channel	Frequency (GHz)	Max. Tune-up Power (dBm)	Max. Power (mW)	Test distance (mm)	Result	exclusion thresholds for 1-g SAR
b/CH 01	2.412	16.0	39.81	5	12.34	3.0
g/CH 01	2.412	14.0	25.12	5	7.79	3.0

- Base on the result of note1, RF exposure evaluation of 802.11 b mode is required.
- Per KDB 248227 D01v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
- Per KDB 248227 D01v02r02, In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. SAR is not required for the following 2.4 GHz OFDM conditions:
 - When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
 - 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.
- The output power of all data rate were pre-scan, just the worst case (the lowest data rate) of all mode were shown in report.
- Per KDB 248227 D01V02r02 section 2.2, when the EUT in continuously transmitting mode, the actual duty cycle is 99.71%, so the duty cycle factor is 1.01.

13.5 WLAN 5.2GHz Band Conducted Power

Average Power (dBm)				
Channel	Frequency (MHz)	802.11 a	802.11 n20	802.11 ac20
CH 36	5180	8.82	8.66	8.66
CH 40	5200	8.95	8.86	8.84
CH 48	5240	8.96	8.85	8.88

Average Power (dBm)			
Channel	Frequency (MHz)	802.11n 40	802.11 ac40
CH 38	5190	8.56	8.68
CH 46	5230	8.67	8.72

Average Power (dBm)		
Channel	Frequency (MHz)	802.11ac 80
CH 42	5210	8.84

Note:

7. Per KDB 447498 D01v06, the 1-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, where
 - f(GHz) is the RF channel transmit frequency in GHz
 - Power and distance are rounded to the nearest mW and mm before calculation
 - The result is rounded to one decimal place for comparison

Channel	Frequency (GHz)	Max. Tune-up Power (dBm)	Max. Power (mW)	Test distance (mm)	Result	exclusion thresholds for 1-g SAR
a/CH 48	5.240	9.0	7.94	5	3.64	3.0

8. Base on the result of note1, RF exposure evaluation of 802.11 a mode is required.
9. Per KDB 248227 D01v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
10. The output power of all data rate were pre-scan, just the worst case (the lowest data rate) of all mode were shown in report.
11. Per KDB 248227 D01V02r02 section 2.2, when the EUT in continuously transmitting mode, the actual duty cycle is 97.75%, so the duty cycle factor is 1.02.

13.6 WLAN 5.8GHz Band Conducted Power

Average Power (dBm)				
Channel	Frequency (MHz)	802.11 a	802.11 n20	802.11 ac20
CH 149	5745	9.92	9.90	10.07
CH 157	5785	9.99	9.86	9.77
CH 165	5825	11.58	11.61	11.51

Average Power (dBm)			
Channel	Frequency (MHz)	802.11n 40	802.11 ac40
CH 151	5755	9.90	9.95
CH 159	5795	10.16	10.20

Average Power (dBm)		
Channel	Frequency (MHz)	802.11 ac80
CH 155	5775	10.24

Note:

12. Per KDB 447498 D01v06, the 1-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, where
 - f(GHz) is the RF channel transmit frequency in GHz
 - Power and distance are rounded to the nearest mW and mm before calculation
 - The result is rounded to one decimal place for comparison

Channel	Frequency (GHz)	Max. Tune-up Power (dBm)	Max. Power (mW)	Test distance (mm)	Result	exclusion thresholds for 1-g SAR
n20/CH 165	5.825	12.0	15.85	5	7.64	3.0

13. Base on the result of note1, RF exposure evaluation of 802.11 a mode is not required.
14. Per KDB 248227 D01v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
15. The output power of all data rate were pre-scan, just the worst case (the lowest data rate) of all mode were shown in report.
16. Per KDB 248227 D01V02r02 section 2.2, when the EUT in continuously transmitting mode, the actual duty cycle is 97.75%, so the duty cycle factor is 1.02.

13.7 Bluetooth Conducted Power

Peak Power (dBm) (Bluetooth)				
Channel	Frequency (MHz)	GFSK	$\pi/4$ -DQPSK	8DPSK
CH 01	2402	6.36	5.75	5.73
CH 39	2441	5.43	4.62	4.60
CH 78	2480	4.61	3.89	3.90

Peak Power (dBm)		
Channel	Frequency (MHz)	BLE
CH 00	2402	-5.97
CH 20	2442	-6.93
CH 39	2480	-6.92

Note:

- Per KDB 447498 D01v06, the 1-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* \leq 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, 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

Channel	Frequency (GHz)	Max. tune-up Power (dBm)	Max. Power (mW)	Test distance (mm)	Result	exclusion thresholds for 1-g SAR
CH 01	2.402	6.5	4.47	5	1.39	3.0

- The max. tune-up power was provided by manufacturer, base on the result of note 1, RF exposure evaluation is not required.
- The output power of all data rate were pre-scan, just the worst case of all mode were shown in report.
- When the minimum *test separation distance* is $<$ 5 mm, a distance of 5 mm according is applied to determine SAR test exclusion.

14 Exposure Positions Consideration

14.1 EUT Antenna Locations

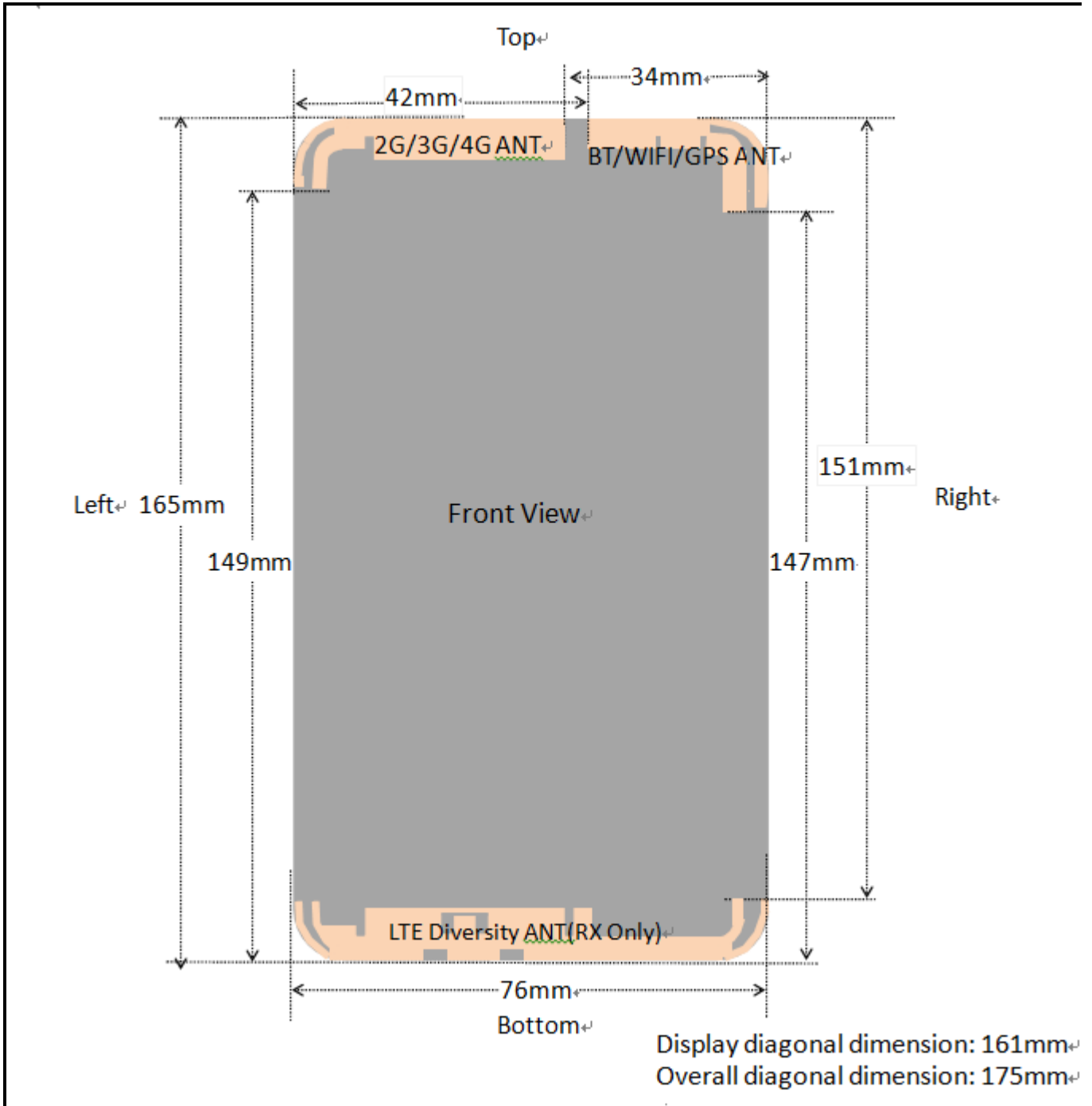


Fig.14.1 EUT Antenna Locations

Note: This antenna diagram is only used as a reference for the distance from the antenna to each edge. For the specific shape of the antenna, please refer to the physical photo.

14.2 Test Positions Consideration

Distance of Antennas to EUT edge/surface Test distance: 10mm						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
2G/3G/4G	<25mm	<25mm	<25mm	149mm	34mm	<25mm
WLAN & Bluetooth	<25mm	<25mm	<25mm	147mm	<25mm	42mm

Test Positions Test distance: 10mm						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
2G/3G/4G	Yes	Yes	Yes	No	No	Yes
WLAN & Bluetooth	Yes	Yes	Yes	No	Yes	No

Note:

1. Head/Body-worn/Hotspot mode SAR assessments are required.
2. Referring to KDB 941225 D06 v02r01, when the overall device length and width are $\geq 9\text{cm} * 5\text{cm}$, the test distance is 10mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.
3. Per KDB 447498 D01v06, for handsets the test separation distance is determined by the smallest distance between the outer surface of the device and the user, which is 0 mm for head SAR, 10 mm for hotspot SAR, and 10 mm for body-worn SAR.

15 SAR Test Results Summary

15.1 Standalone Head SAR Data

➤ GSM Head SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)
1	GSM850/Voice	Right Cheek	190	836.6	32.97	-0.13	33.0	0.014	1.007	0.014
	GSM850/Voice	Right Tilted	190	836.6	32.97	-0.14	33.0	0.002	1.007	0.002
	GSM850/Voice	Left Cheek	190	836.6	32.97	0.12	33.0	0.009	1.007	0.009
	GSM850/Voice	Left Tilted	190	836.6	32.97	0.01	33.0	0.001	1.007	0.001
	GSM1900/Voice	Right Cheek	661	1880.0	30.03	-0.01	30.5	0.183	1.114	0.204
2	GSM1900/Voice	Right Tilted	661	1880.0	30.03	-0.17	30.5	0.319	1.114	0.355
	GSM1900/Voice	Left Cheek	661	1880.0	30.03	0.04	30.5	0.170	1.114	0.189
	GSM1900/Voice	Left Tilted	661	1880.0	30.03	0.05	30.5	0.284	1.114	0.316
	ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					1.6 W/kg (mW/g) Averaged over 1g				

➤ WCDMA Head SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)
3	Band V/RMC	Right Cheek	4132	826.4	24.22	-0.03	24.5	0.006	1.067	0.006
	Band V/RMC	Right Tilted	4132	826.4	24.22	0.19	24.5	0.003	1.067	0.003
	Band V/RMC	Left Cheek	4132	826.4	24.22	-0.05	24.5	0.005	1.067	0.005
	Band V/RMC	Left Tilted	4132	826.4	24.22	0.16	24.5	0.001	1.067	0.001
	Band II/RMC	Right Cheek	9538	1907.6	24.26	-0.17	24.5	0.218	1.057	0.230
4	Band II/RMC	Right Tilted	9538	1907.6	24.26	-0.01	24.5	0.294	1.057	0.311
	Band II/RMC	Left Cheek	9538	1907.6	24.26	0.16	24.5	0.142	1.057	0.150
	Band II/RMC	Left Tilted	9538	1907.6	24.26	0.00	24.5	0.226	1.057	0.239
	ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					1.6 W/kg (mW/g) Averaged over 1g				

➤ LTE 20MHz QPSK 1RB Head SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)
5	Band2/RB#49	Right Cheek	18900	1880.0	23.14	-0.06	23.5	0.183	1.086	0.199
	Band2/RB#49	Right Tilted	18900	1880.0	23.14	-0.00	23.5	0.254	1.086	0.276
	Band2/RB#49	Left Cheek	18900	1880.0	23.14	0.14	23.5	0.103	1.086	0.112
	Band2/RB#49	Left Tilted	18900	1880.0	23.14	0.11	23.5	0.160	1.086	0.174
6	Band4/RB#49	Right Cheek	20175	1732.5	23.14	0.08	23.5	0.247	1.086	0.268
	Band4/RB#49	Right Tilted	20175	1732.5	23.14	-0.18	23.5	0.289	1.086	0.314
	Band4/RB#49	Left Cheek	20175	1732.5	23.14	-0.01	23.5	0.106	1.086	0.115
	Band4/RB#49	Left Tilted	20175	1732.5	23.14	0.05	23.5	0.184	1.086	0.200
7	Band7/RB#49	Right Cheek	21350	2560.0	22.66	0.07	23.0	0.205	1.081	0.222
	Band7/RB#49	Right Tilted	21350	2560.0	22.66	0.22	23.0	0.192	1.081	0.208
	Band7/RB#49	Left Cheek	21350	2560.0	22.66	-0.14	23.0	0.147	1.081	0.159
	Band7/RB#49	Left Tilted	21350	2560.0	22.66	0.16	23.0	0.098	1.081	0.106
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					1.6 W/kg (mW/g) Averaged over 1g					

➤ LTE 10MHz QPSK 1RB Head SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)
8	Band5/RB#24	Right Cheek	20600	844.0	23.51	-0.05	24.0	0.232	1.119	0.260
	Band5/RB#24	Right Tilted	20600	844.0	23.51	0.06	24.0	0.194	1.119	0.217

	Band5/RB#24	Left Cheek	20600	844.0	23.51	0.08	24.0	0.202	1.119	0.226	
	Band5/RB#24	Left Tilted	20600	844.0	23.51	-0.10	24.0	0.153	1.119	0.171	
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

➤ TDD-LTE 20MHz QPSK 1RB Head SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR _{1g} (W/kg)
9	Band38/RB#49	Right Cheek	38150	2610.0	22.72	-0.11	23.0	0.080	1.067	1.008	0.086
	Band38/RB#49	Right Tilted	38150	2610.0	22.72	-0.16	23.0	0.071	1.067	1.008	0.076
	Band38/RB#49	Left Cheek	38150	2610.0	22.72	-0.23	23.0	0.032	1.067	1.008	0.034
	Band38/RB#49	Left Tilted	38150	2610.0	22.72	-0.09	23.0	0.014	1.067	1.008	0.015
10	Band41/RB#49	Right Cheek	41140	2645.0	22.75	-0.29	23.0	0.085	1.059	1.008	0.091
	Band41/RB#49	Right Tilted	41140	2645.0	22.75	0.33	23.0	0.065	1.059	1.008	0.069
	Band41/RB#49	Left Cheek	41140	2645.0	22.75	-0.19	23.0	0.039	1.059	1.008	0.042
	Band41/RB#49	Left Tilted	41140	2645.0	22.75	-0.02	23.0	0.017	1.059	1.008	0.018
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

➤ LTE 20MHz QPSK 50%RB Head SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)	
	Band2/RB#0	Right Cheek	18900	1880.0	22.26	0.15	22.5	0.162	1.057	0.171	
11	Band2/RB#0	Right Tilted	18900	1880.0	22.26	-0.11	22.5	0.211	1.057	0.223	
	Band2/RB#0	Left Cheek	18900	1880.0	22.26	-0.01	22.5	0.087	1.057	0.092	
	Band2/RB#0	Left Tilted	18900	1880.0	22.26	0.07	22.5	0.137	1.057	0.145	
	Band4/RB#24	Right Cheek	20175	1732.5	22.06	0.16	22.5	0.185	1.107	0.205	
12	Band4/RB#24	Right Tilted	20175	1732.5	22.06	0.12	22.5	0.211	1.107	0.234	
	Band4/RB#24	Left Cheek	20175	1732.5	22.06	0.18	22.5	0.075	1.107	0.083	
	Band4/RB#24	Left Tilted	20175	1732.5	22.06	-0.05	22.5	0.149	1.107	0.165	
13	Band7/RB#0	Right Cheek	21350	2560.0	21.77	-0.18	22.0	0.145	1.054	0.153	
	Band7/RB#0	Right Tilted	21350	2560.0	21.77	-0.18	22.0	0.128	1.054	0.135	
	Band7/RB#0	Left Cheek	21350	2560.0	21.77	-0.09	22.0	0.103	1.054	0.109	
	Band7/RB#0	Left Tilted	21350	2560.0	21.77	-0.19	22.0	0.064	1.054	0.067	
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

➤ LTE 10MHz QPSK 50%RB Head SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)	
14	Band5/RB#12	Right Cheek	20600	844.0	22.52	-0.01	23.0	0.177	1.117	0.198	
	Band5/RB#12	Right Tilted	20600	844.0	22.52	-0.05	23.0	0.142	1.117	0.159	
	Band5/RB#12	Left Cheek	20600	844.0	22.52	0.07	23.0	0.151	1.117	0.169	
	Band5/RB#12	Left Tilted	20600	844.0	22.52	-0.14	23.0	0.118	1.117	0.132	
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

➤ TDD-LTE 20MHz QPSK 50%RB Head SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR _{1g} (W/kg)
15	Band38/RB#0	Right Cheek	38150	2610.0	21.56	0.11	22.0	0.062	1.107	1.008	0.069
	Band38/RB#0	Right Tilted	38150	2610.0	21.56	0.05	22.0	0.050	1.107	1.008	0.056
	Band38/RB#0	Left Cheek	38150	2610.0	21.56	0.11	22.0	0.024	1.107	1.008	0.027

	Band38/RB#0	Left Tilted	38150	2610.0	21.56	0.05	22.0	0.007	1.107	1.008	0.008
16	Band41/RB#49	Right Cheek	41140	2645.0	21.53	-0.17	22.0	0.070	1.114	1.008	0.079
	Band41/RB#49	Right Tilted	41140	2645.0	21.53	-0.02	22.0	0.051	1.114	1.008	0.057
	Band41/RB#49	Left Cheek	41140	2645.0	21.53	0.08	22.0	0.022	1.114	1.008	0.025
	Band41/RB#49	Left Tilted	41140	2645.0	21.53	-0.09	22.0	0.008	1.114	1.008	0.009
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

➤ WLAN 2.4 GHz Head SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR _{1g} (W/kg)
	2.4GHz/802.11b	Right Cheek	01	2412	15.68	0.06	16.0	0.118	1.076	1.01	0.128
	2.4GHz/802.11b	Right Tilted	01	2412	15.68	0.11	16.0	0.171	1.076	1.01	0.186
	2.4GHz/802.11b	Left Cheek	01	2412	15.68	-0.04	16.0	0.333	1.076	1.01	0.362
17	2.4GHz/802.11b	Left Tilted	01	2412	15.68	-0.11	16.0	0.395	1.076	1.01	0.429
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

➤ WLAN 5.2 GHz Head SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR _{1g} (W/kg)
	5.2GHz/802.11a	Right Cheek	48	5240	8.96	0.11	9.0	0.061	1.009	1.02	0.063
	5.2GHz/802.11a	Right Tilted	48	5240	8.96	-0.09	9.0	0.075	1.009	1.02	0.077
	5.2GHz/802.11a	Left Cheek	48	5240	8.96	-0.29	9.0	0.127	1.009	1.02	0.131
18	5.2GHz/802.11a	Left Tilted	48	5240	8.96	-0.01	9.0	0.159	1.009	1.02	0.164
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

➤ WLAN 5.8 GHz Head SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR _{1g} (W/kg)
	5.8GHz/802.11n20	Right Cheek	165	5825	11.61	-0.02	12.0	0.047	1.094	1.02	0.052
	5.8GHz/802.11n20	Right Tilted	165	5825	11.61	-0.14	12.0	0.035	1.094	1.02	0.039
19	5.8GHz/802.11n20	Left Cheek	165	5825	11.61	0.10	12.0	0.294	1.094	1.02	0.328
	5.8GHz/802.11n20	Left Tilted	165	5825	11.61	0.11	12.0	0.241	1.094	1.02	0.269
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

Note:

- Per KDB 447498 D01v06, for each exposure position, if the highest output power channel Reported SAR ≤ 0.8W/kg, other channels SAR testing is not necessary.
- Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8W/kg.
- Per KDB 941225 D05v02r05, 100% RB allocation SAR measurement is not required when the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg.
- Per KDB 248227 D01v02r02, for 802.11b DSSS, 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 in that exposure configuration.
- Per KDB 248227 D01v02r02, OFDM SAR is not required 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. Cuz the maximum output power specified for OFDM and DSSS are 25.12mW(14.0dBm) and 39.81mW(16.0dBm), the scaled SAR would be $0.429 \times (25.12/39.81) = 0.271 \text{ W/Kg} < 1.2 \text{ W/kg}$, therefore, SAR is not required for OFDM.
- According to KDB 865664 D02v01r02, SAR plot is required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.

15.2 Standalone Body SAR

➤ GSM Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)
	GSM850/Voice	Front	190	836.6	32.97	-0.06	33.0	0.001	1.007	0.001
20	GSM850/Voice	Back	190	836.6	32.97	0.16	33.0	0.003	1.007	0.003
	GSM1900/Voice	Front	661	1880.0	30.03	0.03	30.5	0.056	1.114	0.062
21	GSM1900/Voice	Back	661	1880.0	30.03	0.14	30.5	0.090	1.114	0.100
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g			

➤ WCDMA Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)
	Band V/RMC	Front	4132	826.4	24.22	-0.09	24.5	0.001	1.067	0.001
22	Band V/RMC	Back	4132	826.4	24.22	0.15	24.5	0.002	1.067	0.002
	Band II/RMC	Front	9538	1907.6	24.26	-0.25	24.5	0.052	1.057	0.055
23	Band II/RMC	Back	9538	1907.6	24.26	0.02	24.5	0.081	1.057	0.086
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g			

➤ LTE 20MHz QPSK 1RB Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)
	Band2/RB#49	Front	18900	1880.0	23.14	-0.08	23.5	0.043	1.086	0.047
24	Band2/RB#49	Back	18900	1880.0	23.14	-0.10	23.5	0.064	1.086	0.070
	Band4/RB#49	Front	20175	1732.5	23.14	-0.12	23.5	0.063	1.086	0.068
25	Band4/RB#49	Back	20175	1732.5	23.14	-0.10	23.5	0.079	1.086	0.086
	Band7/RB#49	Front	21350	2560.0	22.66	0.19	23.0	0.043	1.081	0.046
26	Band7/RB#49	Back	21350	2560.0	22.66	-0.07	23.0	0.177	1.081	0.191
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g			

➤ LTE 10MHz QPSK 1RB Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)
	Band5/RB#24	Front	20600	844.0	23.51	-0.10	24.0	0.078	1.119	0.087
27	Band5/RB#24	Back	20600	844.0	23.51	-0.01	24.0	0.101	1.119	0.113
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g			

➤ TDD-LTE 20MHz QPSK 1RB Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR _{1g} (W/kg)
	Band38/RB#49	Front	38150	2610.0	22.72	-0.09	23.0	0.042	1.067	1.008	0.045
28	Band38/RB#49	Back	38150	2610.0	22.72	0.08	23.0	0.069	1.067	1.008	0.074
	Band41/RB#49	Front	41140	2645.0	22.75	-0.03	23.0	0.037	1.059	1.008	0.039
29	Band41/RB#49	Back	41140	2645.0	22.75	0.23	23.0	0.065	1.059	1.008	0.069
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

> LTE 20MHz QPSK 50%RB Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)	
	Band2/RB#0	Front	18900	1880.0	22.26	0.01	22.5	0.032	1.057	0.034	
30	Band2/RB#0	Back	18900	1880.0	22.26	0.00	22.5	0.058	1.057	0.061	
	Band4/RB#24	Front	20175	1732.5	22.06	0.14	22.5	0.041	1.107	0.045	
31	Band4/RB#24	Back	20175	1732.5	22.06	0.06	22.5	0.055	1.107	0.061	
	Band7/RB#0	Front	21350	2560.0	21.77	-0.11	22.0	0.023	1.054	0.024	
32	Band7/RB#0	Back	21350	2560.0	21.77	0.10	22.0	0.140	1.054	0.148	
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

> LTE 10MHz QPSK 50%RB Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)	
	Band5/RB#12	Front	20600	844.0	22.52	0.14	23.0	0.052	1.117	0.058	
33	Band5/RB#12	Back	20600	844.0	22.52	0.12	23.0	0.088	1.117	0.098	
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

> TDD-LTE 20MHz QPSK 50%RB Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR _{1g} (W/kg)
	Band38/RB#0	Front	38150	2610.0	21.56	-0.11	22.0	0.031	1.107	1.008	0.035
34	Band38/RB#0	Back	38150	2610.0	21.56	0.12	22.0	0.053	1.107	1.008	0.059
	Band41/RB#49	Front	41140	2645.0	21.53	-0.08	22.0	0.024	1.114	1.008	0.027
35	Band41/RB#49	Back	41140	2645.0	21.53	0.19	22.0	0.051	1.114	1.008	0.057
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

> WLAN 2.4 GHz Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR _{1g} (W/kg)
	2.4GHz/802.11b	Front	01	2412	15.68	0.00	16.0	0.086	1.076	1.01	0.093
36	2.4GHz/802.11b	Back	01	2412	15.68	-0.17	16.0	0.207	1.076	1.01	0.225
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

> WLAN 5.2 GHz Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR _{1g} (W/kg)
	5.2GHz/802.11a	Front	48	5240	8.96	-0.00	9.0	0.039	1.009	1.02	0.040
37	5.2GHz/802.11a	Back	48	5240	8.96	0.00	9.0	0.054	1.009	1.02	0.056
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

> WLAN 5.8 GHz Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR _{1g} (W/kg)
	5.8GHz/802.11n20	Front	165	5825	11.61	-0.11	12.0	0.022	1.094	1.02	0.025

38	5.8GHz/802.11n20	Back	165	5825	11.61	-0.14	12.0	0.065	1.094	1.02	0.073
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

Note:

1. Body-worn SAR testing was performed at 10mm separation, and this distance is determined by the handset manufacturer that there will be body-worn accessories that users may acquire at the time of equipment certification, to enable users to purchase aftermarket body-worn accessories with the required minimum separation.
2. Per KDB 941225 D06v02r01, when the same wireless modes and device transmission configurations are required for testing body-worn accessories and hotspot mode, it is not necessary to test body-worn accessory SAR for the same device orientation if the test separation distance for hotspot mode is more conservative than that used for body-worn accessories.
3. Body-worn exposure conditions are intended to voice call operations, therefore GSM voice call is selected to be tested.
4. Per KDB 648474 D04v01r03, when the *Reported* SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
5. The WLAN SAR perform the front and back position, due considered the simultaneous SAR for body-worn.
6. Per KDB 447498 D01v06, for each exposure position, if the highest output channel Reported SAR ≤ 0.8 W/kg, other channels SAR testing is not necessary.
7. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8 W/kg.
8. Per KDB 941225 D05v02r05, 100% RB allocation SAR measurement is not required when the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg.
9. According to KDB 865664 D02v01r02, SAR plot is required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.

15.3 Body SAR in Hotspot Mode

➤ GSM Body SAR in Hotspot mode

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)
	GPRS850/2 slots	Front	190	836.6	31.99	0.16	32.0	0.002	1.002	0.002
39	GPRS850/2 slots	Back	190	836.6	31.99	-0.11	32.0	0.006	1.002	0.006
	GPRS850/2 slots	Left	190	836.6	31.99	0.05	32.0	0.001	1.002	0.001
	GPRS850/2 slots	Top	190	836.6	31.99	-0.14	32.0	0.001	1.002	0.001
	GPRS1900/2 slots	Front	661	1880.0	29.10	0.12	29.5	0.085	1.096	0.093
	GPRS1900/2 slots	Back	661	1880.0	29.10	0.06	29.5	0.131	1.096	0.144
	GPRS1900/2 slots	Left	661	1880.0	29.10	-0.16	29.5	0.081	1.096	0.089
40	GPRS1900/2 slots	Top	661	1880.0	29.10	-0.00	29.5	0.242	1.096	0.265
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g			

➤ WCDMA Body SAR in Hotspot mode

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)
	Band V/RMC	Front	4132	826.4	24.22	-0.09	24.5	0.001	1.067	0.001
22	Band V/RMC	Back	4132	826.4	24.22	0.15	24.5	0.002	1.067	0.002
	Band V/RMC	Left	4132	826.4	24.22	0.01	24.5	0.001	1.067	0.001
	Band V/RMC	Top	4132	826.4	24.22	-0.05	24.5	0.001	1.067	0.001
	Band II/RMC	Front	9538	1907.6	24.26	-0.25	24.5	0.052	1.057	0.055
	Band II/RMC	Back	9538	1907.6	24.26	0.02	24.5	0.081	1.057	0.086
	Band II/RMC	Left	9538	1907.6	24.26	0.04	24.5	0.068	1.057	0.072
41	Band II/RMC	Top	9538	1907.6	24.26	-0.22	24.5	0.139	1.057	0.147
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g			

➤ LTE 20MHz QPSK 1RB Body SAR in Hotspot mode

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)
	Band2/RB#49	Front	18900	1880.0	23.14	-0.08	23.5	0.043	1.086	0.047
	Band2/RB#49	Back	18900	1880.0	23.14	-0.10	23.5	0.064	1.086	0.070
	Band2/RB#49	Left	18900	1880.0	23.14	-0.13	23.5	0.057	1.086	0.062
42	Band2/RB#49	Top	18900	1880.0	23.14	-0.12	23.5	0.120	1.086	0.130
	Band4/RB#49	Front	20175	1732.5	23.14	-0.12	23.5	0.063	1.086	0.068
	Band4/RB#49	Back	20175	1732.5	23.14	-0.10	23.5	0.079	1.086	0.086
	Band4/RB#49	Left	20175	1732.5	23.14	0.16	23.5	0.071	1.086	0.077
43	Band4/RB#49	Top	20175	1732.5	23.14	0.04	23.5	0.134	1.086	0.146
	Band7/RB#49	Front	21350	2560.0	22.66	0.19	23.0	0.043	1.081	0.046
26	Band7/RB#49	Back	21350	2560.0	22.66	-0.07	23.0	0.177	1.081	0.191
	Band7/RB#49	Left	21350	2560.0	22.66	0.13	23.0	0.084	1.081	0.091
	Band7/RB#49	Top	21350	2560.0	22.66	0.07	23.0	0.101	1.081	0.109
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g			

➤ LTE 10MHz QPSK 1RB Body SAR in Hotspot mode

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)
	Band5/RB#24	Front	20600	844.0	23.51	-0.10	24.0	0.078	1.119	0.087
27	Band5/RB#24	Back	20600	844.0	23.51	-0.01	24.0	0.101	1.119	0.113
	Band5/RB#24	Left	20600	844.0	23.51	-0.13	24.0	0.062	1.119	0.069
	Band5/RB#24	Top	20600	844.0	23.51	-0.03	24.0	0.084	1.119	0.094

ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population	1.6 W/kg (mW/g) Averaged over 1g
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➤ TDD-LTE 20MHz QPSK 1RB Body SAR in Hotspot mode

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR _{1g} (W/kg)
	Band38/RB#49	Front	38150	2610.0	22.72	-0.09	23.0	0.042	1.067	1.008	0.045
28	Band38/RB#49	Back	38150	2610.0	22.72	0.08	23.0	0.069	1.067	1.008	0.074
	Band38/RB#49	Left	38150	2610.0	22.72	0.16	23.0	0.027	1.067	1.008	0.029
	Band38/RB#49	Top	38150	2610.0	22.72	0.11	23.0	0.030	1.067	1.008	0.032
	Band41/RB#49	Front	41140	2645.0	22.75	-0.03	23.0	0.037	1.059	1.008	0.039
29	Band41/RB#49	Back	41140	2645.0	22.75	0.23	23.0	0.065	1.059	1.008	0.069
	Band41/RB#49	Left	41140	2645.0	22.75	-0.06	23.0	0.021	1.059	1.008	0.022
	Band41/RB#49	Top	41140	2645.0	22.75	0.15	23.0	0.025	1.059	1.008	0.027

ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population	1.6 W/kg (mW/g) Averaged over 1g
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➤ LTE 20MHz QPSK 50%RB Body SAR in Hotspot mode

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)
	Band2/RB#0	Front	18900	1880.0	22.26	0.01	22.5	0.032	1.057	0.034
	Band2/RB#0	Back	18900	1880.0	22.26	0.00	22.5	0.058	1.057	0.061
	Band2/RB#0	Left	18900	1880.0	22.26	-0.04	22.5	0.046	1.057	0.049
44	Band2/RB#0	Top	18900	1880.0	22.26	-0.11	22.5	0.099	1.057	0.105
	Band4/RB#24	Front	20175	1732.5	22.06	0.14	22.5	0.041	1.107	0.045
	Band4/RB#24	Back	20175	1732.5	22.06	0.06	22.5	0.055	1.107	0.061
	Band4/RB#24	Left	20175	1732.5	22.06	-0.10	22.5	0.048	1.107	0.053
45	Band4/RB#24	Top	20175	1732.5	22.06	-0.04	22.5	0.109	1.107	0.121
	Band7/RB#0	Front	21350	2560.0	21.77	-0.11	22.0	0.023	1.054	0.024
32	Band7/RB#0	Back	21350	2560.0	21.77	0.10	22.0	0.140	1.054	0.148
	Band7/RB#0	Left	21350	2560.0	21.77	0.02	22.0	0.062	1.054	0.065
	Band7/RB#0	Top	21350	2560.0	21.77	0.06	22.0	0.088	1.054	0.093

ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population	1.6 W/kg (mW/g) Averaged over 1g
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➤ LTE 10MHz QPSK 50%RB Body SAR in Hotspot mode

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)
	Band5/RB#12	Front	20600	844.0	22.52	0.14	23.0	0.052	1.117	0.058
33	Band5/RB#12	Back	20600	844.0	22.52	0.12	23.0	0.088	1.117	0.098
	Band5/RB#12	Left	20600	844.0	22.52	-0.02	23.0	0.041	1.117	0.046
	Band5/RB#12	Top	20600	844.0	22.52	0.04	23.0	0.065	1.117	0.073

ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population	1.6 W/kg (mW/g) Averaged over 1g
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➤ TDD-LTE 20MHz QPSK 50%RB Body SAR in Hotspot mode

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR _{1g} (W/kg)
	Band38/RB#0	Front	38150	2610.0	21.56	-0.11	22.0	0.031	1.107	1.008	0.035
34	Band38/RB#0	Back	38150	2610.0	21.56	0.12	22.0	0.053	1.107	1.008	0.059
	Band38/RB#0	Left	38150	2610.0	21.56	-0.05	22.0	0.018	1.107	1.008	0.020
	Band38/RB#0	Top	38150	2610.0	21.56	0.12	22.0	0.024	1.107	1.008	0.027

	Band41/RB#49	Front	41140	2645.0	21.53	-0.08	22.0	0.024	1.114	1.008	0.027
35	Band41/RB#49	Back	41140	2645.0	21.53	0.19	22.0	0.051	1.114	1.008	0.057
	Band41/RB#49	Left	41140	2645.0	21.53	0.15	22.0	0.013	1.114	1.008	0.015
	Band41/RB#49	Top	41140	2645.0	21.53	0.07	22.0	0.019	1.114	1.008	0.021
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

➤ WLAN 2.4GHz Body SAR in Hotspot mode

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR _{1g} (W/kg)
	2.4GHz/802.11b	Front	01	2412	15.68	0.00	16.0	0.086	1.076	1.01	0.093
36	2.4GHz/802.11b	Back	01	2412	15.68	-0.17	16.0	0.207	1.076	1.01	0.225
	2.4GHz/802.11b	Right	01	2412	15.68	-0.05	16.0	0.114	1.076	1.01	0.124
	2.4GHz/802.11b	Top	01	2412	15.68	-0.10	16.0	0.196	1.076	1.01	0.213
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

➤ WLAN 5.2GHz Body SAR in Hotspot mode

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR _{1g} (W/kg)
	5.2GHz/802.11a	Front	48	5240	8.96	-0.00	9.0	0.039	1.009	1.02	0.040
	5.2GHz/802.11a	Back	48	5240	8.96	0.00	9.0	0.054	1.009	1.02	0.056
	5.2GHz/802.11a	Right	48	5240	8.96	-0.17	9.0	0.041	1.009	1.02	0.042
46	5.2GHz/802.11a	Top	48	5240	8.96	0.14	9.0	0.117	1.009	1.02	0.120
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

➤ WLAN 5.8GHz Body SAR in Hotspot mode

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR _{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR _{1g} (W/kg)
	5.8GHz/802.11n20	Front	165	5825	11.61	-0.11	12.0	0.022	1.094	1.02	0.025
38	5.8GHz/802.11n20	Back	165	5825	11.61	-0.14	12.0	0.065	1.094	1.02	0.073
	5.8GHz/802.11n20	Right	165	5825	11.61	-0.06	12.0	0.037	1.094	1.02	0.041
	5.8GHz/802.11n20	Top	165	5825	11.61	-0.16	12.0	0.055	1.094	1.02	0.061
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							1.6 W/kg (mW/g) Averaged over 1g				

Note:

- Per KDB 447498 D01v06, for each exposure position, if the highest output channel Reported SAR ≤ 0.8W/kg, other channels SAR testing is not necessary.
- Additional WLAN SAR testing was performed for simultaneous transmission analysis.
- For Hotspot SAR testing, per KDB 941225 D06v02r01, for EUT dimension ≥ 9cm*5cm, the test distance is 10mm. SAR must be measured for all surfaces and sides with a transmitting antenna located within 2.5cm from that surface or edge.
- Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA output power is < 0.25dB higher than RMC 12.2kbps, or Reported SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA SAR evaluation can be excluded.
- Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8W/kg.
- Per KDB 648474 D04v01r03, when the Reported SAR for a body-worn accessory measured without a headset connected to the handset is > 1.2 W/kg, SAR testing with a headset connected to the handset is required.

7. Per KDB 941225 D05v02r05, 100% RB allocation SAR measurement is not required when the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel.
8. According to KDB 865664 D02v01r02, SAR plot is required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.
9. Highlight part of test data means repeated test.

15.4 Multi-Band Simultaneous Transmission Considerations

➤ **Simultaneous Transmission Capabilities**

According to FCC KDB Publication 447498 D01v06, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds. Possible transmission paths for the EUT are shown in below Figure and are color-coded to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.



Fig.15.1 Simultaneous Transmission Paths

➤ **Simultaneous Transmission Procedures**

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB 447498 D01v06, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤ 1.6 W/kg. When standalone SAR is not required to be measured, per FCC KDB 447498 D01v06 4.3.2), the following equation must be used to estimate the standalone 1g SAR for simultaneous transmission assessment involving that transmitter.

$$\text{Estimated SAR} = \frac{\sqrt{f(\text{GHz})}}{7.5} \cdot \frac{\text{Max. power of channel, mW}}{\text{Min. Separation Distance, mm}}$$

Mode	Max. tune-up Power (dBm)	Exposure Position	Head	Body	Hotspot
		Test Distance (mm)	0	10	10
Bluetooth	6.5	Estimated SAR (W/kg)	0.185	0.092	0.092

Note:

- When the minimum *test separation distance* is < 5 mm, a distance of 5 mm according is applied to determine estimated SAR.

➤ **Multi-Band simultaneous Transmission Consideration**

Simultaneous Transmission Consideration	Position	Applicable Combination
	Head	WWAN (Voice) + WLAN 2.4 GHz/5.2GHz/5.8GHz
		WWAN (Voice) + Bluetooth
	Body	WWAN (Voice) + WLAN 2.4 GHz/5.2GHz/5.8GHz
		WWAN (Voice) + Bluetooth
Hotspot	WWAN (Data) + WLAN 2.4 GHz/5.2GHz/5.8GHz	
	WWAN (Data) + Bluetooth	

Note:

- WLAN 2.4GHz Band, WLAN 5.2GHz Band, WLAN 5.8GHz Band and Bluetooth share the same antenna, and cannot transmit simultaneously.
- GSM/WCDMA/LTE shares the same antenna, and cannot transmit simultaneously.
- The Report SAR summation is calculated based on the same configuration and test position.
- Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - Scalar SAR summation < 1.6 W/kg.
 - $SPLSR = (SAR_1 + SAR_2)^{1.5} / (min. separation distance, mm)$, and the peak separation distance is determined from the square root of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$, where (x_1, y_1, z_1) and (x_2, y_2, z_2) are the coordinates of the extrapolated peak SAR locations in the zoom scan If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary
 - Simultaneously transmission SAR measurement, and the Reported multi-band SAR < 1.6 W/kg

15.5 SAR Simultaneous Transmission Analysis

➤ Head Simultaneous Transmission

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
GSM850	Right Cheek	0.014	0.128	0.142	GSM850	Right Cheek	0.014	0.185	0.199
	Right Tilted	0.002	0.186	0.188		Right Tilted	0.002	0.185	0.187
	Left Cheek	0.009	0.362	0.371		Left Cheek	0.009	0.185	0.194
	Left Tilted	0.001	0.429	0.430		Left Tilted	0.001	0.185	0.186

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
GSM 1900	Right Cheek	0.204	0.128	0.332	GSM 1900	Right Cheek	0.204	0.185	0.389
	Right Tilted	0.355	0.186	0.541		Right Tilted	0.355	0.185	0.540
	Left Cheek	0.189	0.362	0.551		Left Cheek	0.189	0.185	0.374
	Left Tilted	0.316	0.429	0.745		Left Tilted	0.316	0.185	0.501

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
WCDMA Band V	Right Cheek	0.006	0.128	0.134	WCDMA Band V	Right Cheek	0.006	0.185	0.191
	Right Tilted	0.003	0.186	0.189		Right Tilted	0.003	0.185	0.188
	Left Cheek	0.005	0.362	0.367		Left Cheek	0.005	0.185	0.190
	Left Tilted	0.001	0.429	0.430		Left Tilted	0.001	0.185	0.186

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
WCDMA Band II	Right Cheek	0.230	0.128	0.358	WCDMA Band II	Right Cheek	0.230	0.185	0.415
	Right Tilted	0.311	0.186	0.497		Right Tilted	0.311	0.185	0.496
	Left Cheek	0.150	0.362	0.512		Left Cheek	0.150	0.185	0.335
	Left Tilted	0.239	0.429	0.668		Left Tilted	0.239	0.185	0.424

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 2	Right Cheek	0.199	0.128	0.327	LTE Band 2	Right Cheek	0.199	0.185	0.384
	Right Tilted	0.276	0.186	0.462		Right Tilted	0.276	0.185	0.461
	Left Cheek	0.112	0.362	0.474		Left Cheek	0.112	0.185	0.297
	Left Tilted	0.174	0.429	0.603		Left Tilted	0.174	0.185	0.359

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 4	Right Cheek	0.268	0.128	0.396	LTE Band 4	Right Cheek	0.268	0.185	0.453
	Right Tilted	0.314	0.186	0.500		Right Tilted	0.314	0.185	0.499
	Left Cheek	0.115	0.362	0.477		Left Cheek	0.115	0.185	0.300
	Left Tilted	0.200	0.429	0.629		Left Tilted	0.200	0.185	0.385

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 5	Right Cheek	0.260	0.128	0.388	LTE Band 5	Right Cheek	0.260	0.185	0.445
	Right Tilted	0.217	0.186	0.403		Right Tilted	0.217	0.185	0.402
	Left Cheek	0.226	0.362	0.588		Left Cheek	0.226	0.185	0.411
	Left Tilted	0.171	0.429	0.600		Left Tilted	0.171	0.185	0.356

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 7	Right Cheek	0.222	0.128	0.350	LTE Band 7	Right Cheek	0.222	0.185	0.407
	Right Tilted	0.208	0.186	0.394		Right Tilted	0.208	0.185	0.393
	Left Cheek	0.159	0.362	0.521		Left Cheek	0.159	0.185	0.344
	Left Tilted	0.106	0.429	0.535		Left Tilted	0.106	0.185	0.291

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 38	Right Cheek	0.086	0.128	0.214	LTE Band 38	Right Cheek	0.086	0.185	0.271
	Right Tilted	0.076	0.186	0.262		Right Tilted	0.076	0.185	0.261
	Left Cheek	0.034	0.362	0.396		Left Cheek	0.034	0.185	0.219
	Left Tilted	0.015	0.429	0.444		Left Tilted	0.015	0.185	0.200

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 41	Right Cheek	0.091	0.128	0.219	LTE Band 41	Right Cheek	0.091	0.185	0.276
	Right Tilted	0.069	0.186	0.255		Right Tilted	0.069	0.185	0.254
	Left Cheek	0.042	0.362	0.404		Left Cheek	0.042	0.185	0.227
	Left Tilted	0.018	0.429	0.447		Left Tilted	0.018	0.185	0.203

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
GSM850	Right Cheek	0.014	0.063	0.077	GSM850	Right Cheek	0.014	0.052	0.066
	Right Tilted	0.002	0.077	0.079		Right Tilted	0.002	0.039	0.041
	Left Cheek	0.009	0.131	0.140		Left Cheek	0.009	0.328	0.337
	Left Tilted	0.001	0.164	0.165		Left Tilted	0.001	0.269	0.270

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
GSM 1900	Right Cheek	0.204	0.063	0.267	GSM 1900	Right Cheek	0.204	0.052	0.256
	Right Tilted	0.355	0.077	0.432		Right Tilted	0.355	0.039	0.394
	Left Cheek	0.189	0.131	0.320		Left Cheek	0.189	0.328	0.517
	Left Tilted	0.316	0.164	0.480		Left Tilted	0.316	0.269	0.585

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
WCDMA Band V	Right Cheek	0.006	0.063	0.069	WCDMA Band V	Right Cheek	0.006	0.052	0.058
	Right Tilted	0.003	0.077	0.080		Right Tilted	0.003	0.039	0.042
	Left Cheek	0.005	0.131	0.136		Left Cheek	0.005	0.328	0.333
	Left Tilted	0.001	0.164	0.165		Left Tilted	0.001	0.269	0.270

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
WCDMA Band II	Right Cheek	0.230	0.063	0.293	WCDMA Band II	Right Cheek	0.230	0.052	0.282
	Right Tilted	0.311	0.077	0.388		Right Tilted	0.311	0.039	0.350
	Left Cheek	0.150	0.131	0.281		Left Cheek	0.150	0.328	0.478
	Left Tilted	0.239	0.164	0.403		Left Tilted	0.239	0.269	0.508

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 2	Right Cheek	0.199	0.063	0.262	LTE Band 2	Right Cheek	0.199	0.052	0.251
	Right Tilted	0.276	0.077	0.353		Right Tilted	0.276	0.039	0.315
	Left Cheek	0.112	0.131	0.243		Left Cheek	0.112	0.328	0.440
	Left Tilted	0.174	0.164	0.338		Left Tilted	0.174	0.269	0.443

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 4	Right Cheek	0.268	0.063	0.331	LTE Band 4	Right Cheek	0.268	0.052	0.320
	Right Tilted	0.314	0.077	0.391		Right Tilted	0.314	0.039	0.353
	Left Cheek	0.115	0.131	0.246		Left Cheek	0.115	0.328	0.443
	Left Tilted	0.200	0.164	0.364		Left Tilted	0.200	0.269	0.469

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 5	Right Cheek	0.260	0.063	0.323	LTE Band 5	Right Cheek	0.260	0.052	0.312
	Right Tilted	0.217	0.077	0.294		Right Tilted	0.217	0.039	0.256
	Left Cheek	0.226	0.131	0.357		Left Cheek	0.226	0.328	0.554
	Left Tilted	0.171	0.164	0.335		Left Tilted	0.171	0.269	0.440

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 7	Right Cheek	0.222	0.063	0.285	LTE Band 7	Right Cheek	0.222	0.052	0.274
	Right Tilted	0.208	0.077	0.285		Right Tilted	0.208	0.039	0.247
	Left Cheek	0.159	0.131	0.290		Left Cheek	0.159	0.328	0.487
	Left Tilted	0.106	0.164	0.270		Left Tilted	0.106	0.269	0.375

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 38	Right Cheek	0.086	0.063	0.149	LTE Band 38	Right Cheek	0.086	0.052	0.138
	Right Tilted	0.076	0.077	0.153		Right Tilted	0.076	0.039	0.115
	Left Cheek	0.034	0.131	0.165		Left Cheek	0.034	0.328	0.362
	Left Tilted	0.015	0.164	0.179		Left Tilted	0.015	0.269	0.284

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 41	Right Cheek	0.091	0.063	0.154	LTE Band 41	Right Cheek	0.091	0.052	0.143
	Right Tilted	0.069	0.077	0.146		Right Tilted	0.069	0.039	0.108
	Left Cheek	0.042	0.131	0.173		Left Cheek	0.042	0.328	0.370
	Left Tilted	0.018	0.164	0.182		Left Tilted	0.018	0.269	0.287

➤ **Body worn Simultaneous Transmission**

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
GSM850	Front	0.001	0.093	0.094	GSM850	Front	0.001	0.092	0.093
	Back	0.003	0.225	0.228		Back	0.003	0.092	0.095

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
GSM 1900	Front	0.062	0.093	0.155	GSM 1900	Front	0.062	0.092	0.154
	Back	0.100	0.225	0.325		Back	0.100	0.092	0.192

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
WCDMA Band V	Front	0.001	0.093	0.094	WCDMA Band V	Front	0.001	0.092	0.093
	Back	0.002	0.225	0.227		Back	0.002	0.092	0.094

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
WCDMA Band II	Front	0.055	0.093	0.148	WCDMA Band II	Front	0.055	0.092	0.147
	Back	0.086	0.225	0.311		Back	0.086	0.092	0.178

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 2	Front	0.047	0.093	0.140	LTE Band 2	Front	0.047	0.092	0.139
	Back	0.070	0.225	0.295		Back	0.070	0.092	0.162

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 4	Front	0.068	0.093	0.161	LTE Band 4	Front	0.068	0.092	0.160
	Back	0.086	0.225	0.311		Back	0.086	0.092	0.178

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 5	Front	0.087	0.093	0.180	LTE Band 5	Front	0.087	0.092	0.179
	Back	0.113	0.225	0.338		Back	0.113	0.092	0.205

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 7	Front	0.046	0.093	0.139	LTE Band 7	Front	0.046	0.092	0.138
	Back	0.191	0.225	0.416		Back	0.191	0.092	0.283

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 38	Front	0.045	0.093	0.138	LTE Band 17	Front	0.045	0.092	0.137
	Back	0.074	0.225	0.299		Back	0.074	0.092	0.166

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 41	Front	0.039	0.093	0.132	LTE Band 41	Front	0.039	0.092	0.131
	Back	0.069	0.225	0.294		Back	0.069	0.092	0.161

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
GSM850	Front	0.001	0.040	0.041	GSM850	Front	0.001	0.025	0.026
	Back	0.003	0.056	0.059		Back	0.003	0.073	0.076

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
GSM 1900	Front	0.062	0.040	0.102	GSM 1900	Front	0.062	0.025	0.087
	Back	0.100	0.056	0.156		Back	0.100	0.073	0.173

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
WCDMA Band V	Front	0.001	0.040	0.041	WCDMA Band V	Front	0.001	0.025	0.026
	Back	0.002	0.056	0.058		Back	0.002	0.073	0.075

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
WCDMA Band II	Front	0.055	0.040	0.095	WCDMA Band II	Front	0.055	0.025	0.080
	Back	0.086	0.056	0.142		Back	0.086	0.073	0.159

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 2	Front	0.047	0.040	0.087	LTE Band 2	Front	0.047	0.025	0.072
	Back	0.070	0.056	0.126		Back	0.070	0.073	0.143

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 4	Front	0.068	0.040	0.108	LTE Band 4	Front	0.068	0.025	0.093
	Back	0.086	0.056	0.142		Back	0.086	0.073	0.159

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 5	Front	0.087	0.040	0.127	LTE Band 5	Front	0.087	0.025	0.112
	Back	0.113	0.056	0.169		Back	0.113	0.073	0.186

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 7	Front	0.046	0.040	0.086	LTE Band 7	Front	0.046	0.025	0.071
	Back	0.191	0.056	0.247		Back	0.191	0.073	0.264

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 38	Front	0.045	0.040	0.085	LTE Band 17	Front	0.045	0.025	0.070
	Back	0.074	0.056	0.130		Back	0.074	0.073	0.147

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 41	Front	0.039	0.040	0.079	LTE Band 41	Front	0.039	0.025	0.064
	Back	0.069	0.056	0.125		Back	0.069	0.073	0.142

➤ Hotspot mode Simultaneous Transmission

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
GSM850	Front	0.002	0.093	0.095	GSM850	Front	0.002	0.092	0.094
	Back	0.006	0.225	0.231		Back	0.006	0.092	0.098
	Left	0.001	/	0.001		Left	0.001	/	0.001
	Right	/	0.124	0.124		Right	/	0.092	0.092
	Top	0.001	0.213	0.214		Top	0.001	0.092	0.093
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
GSM 1900	Front	0.093	0.093	0.186	GSM 1900	Front	0.093	0.092	0.185
	Back	0.144	0.225	0.369		Back	0.144	0.092	0.236
	Left	0.089	/	0.089		Left	0.089	/	0.089
	Right	/	0.124	0.124		Right	/	0.092	0.092
	Top	0.265	0.213	0.478		Top	0.265	0.092	0.357
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
WCDMA Band V	Front	0.001	0.093	0.094	WCDMA Band V	Front	0.001	0.092	0.093
	Back	0.002	0.225	0.227		Back	0.002	0.092	0.094
	Left	0.001	/	0.001		Left	0.001	/	0.001
	Right	/	0.124	0.124		Right	/	0.092	0.092
	Top	0.001	0.213	0.214		Top	0.001	0.092	0.093
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
WCDMA Band II	Front	0.055	0.093	0.148	WCDMA Band II	Front	0.055	0.092	0.147
	Back	0.086	0.225	0.311		Back	0.086	0.092	0.178
	Left	0.072	/	0.072		Left	0.072	/	0.072
	Right	/	0.124	0.124		Right	/	0.092	0.092
	Top	0.147	0.213	0.360		Top	0.147	0.092	0.239
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 2	Front	0.047	0.093	0.140	LTE Band 2	Front	0.047	0.092	0.139
	Back	0.070	0.225	0.295		Back	0.070	0.092	0.162
	Left	0.062	/	0.062		Left	0.062	/	0.062
	Right	/	0.124	0.124		Right	/	0.092	0.092
	Top	0.130	0.213	0.343		Top	0.130	0.092	0.222
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 4	Front	0.068	0.093	0.161	LTE Band 4	Front	0.068	0.092	0.160
	Back	0.086	0.225	0.311		Back	0.086	0.092	0.178
	Left	0.077	/	0.077		Left	0.077	/	0.077
	Right	/	0.124	0.124		Right	/	0.092	0.092
	Top	0.146	0.213	0.359		Top	0.146	0.092	0.238
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 5	Front	0.087	0.093	0.180	LTE Band 5	Front	0.087	0.092	0.179
	Back	0.113	0.225	0.338		Back	0.113	0.092	0.205
	Left	0.069	/	0.069		Left	0.069	/	0.069
	Right	/	0.124	0.124		Right	/	0.092	0.092
	Top	0.094	0.213	0.307		Top	0.094	0.092	0.186
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 7	Front	0.046	0.093	0.139	LTE Band 7	Front	0.046	0.092	0.138
	Back	0.191	0.225	0.416		Back	0.191	0.092	0.283
	Left	0.091	/	0.091		Left	0.091	/	0.091
	Right	/	0.124	0.124		Right	/	0.092	0.092
	Top	0.109	0.213	0.322		Top	0.109	0.092	0.201
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 38	Front	0.045	0.093	0.138	LTE Band 38	Front	0.045	0.092	0.137
	Back	0.074	0.225	0.299		Back	0.074	0.092	0.166
	Left	0.029	/	0.029		Left	0.029	/	0.029
	Right	/	0.124	0.124		Right	/	0.092	0.092
	Top	0.032	0.213	0.245		Top	0.032	0.092	0.124
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	2.4GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	Bluetooth Estimated SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 41	Front	0.039	0.093	0.132	LTE Band 41	Front	0.039	0.092	0.131
	Back	0.069	0.225	0.294		Back	0.069	0.092	0.161
	Left	0.022	/	0.022		Left	0.022	/	0.022
	Right	/	0.124	0.124		Right	/	0.092	0.092
	Top	0.027	0.213	0.240		Top	0.027	0.092	0.119
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
GSM850	Front	0.002	0.040	0.042	GSM850	Front	0.002	0.025	0.027
	Back	0.006	0.056	0.062		Back	0.006	0.073	0.079
	Left	0.001	/	0.001		Left	0.001	/	0.001
	Right	/	0.042	0.042		Right	/	0.041	0.041
	Top	0.001	0.120	0.121		Top	0.001	0.061	0.062
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
GSM 1900	Front	0.093	0.040	0.133	GSM 1900	Front	0.093	0.025	0.118
	Back	0.144	0.056	0.200		Back	0.144	0.073	0.217
	Left	0.089	/	0.089		Left	0.089	/	0.089
	Right	/	0.042	0.042		Right	/	0.041	0.041
	Top	0.265	0.120	0.385		Top	0.265	0.061	0.326
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
WCDMA Band V	Front	0.001	0.040	0.041	WCDMA Band V	Front	0.001	0.025	0.026
	Back	0.002	0.056	0.058		Back	0.002	0.073	0.075
	Left	0.001	/	0.001		Left	0.001	/	0.001
	Right	/	0.042	0.042		Right	/	0.041	0.041
	Top	0.001	0.120	0.121		Top	0.001	0.061	0.062
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
WCDMA Band II	Front	0.055	0.040	0.095	WCDMA Band II	Front	0.055	0.025	0.080
	Back	0.086	0.056	0.142		Back	0.086	0.073	0.159
	Left	0.072	/	0.072		Left	0.072	/	0.072
	Right	/	0.042	0.042		Right	/	0.041	0.041
	Top	0.147	0.120	0.267		Top	0.147	0.061	0.208
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 2	Front	0.047	0.040	0.087	LTE Band 2	Front	0.047	0.025	0.072
	Back	0.070	0.056	0.126		Back	0.070	0.073	0.143
	Left	0.062	/	0.062		Left	0.062	/	0.062
	Right	/	0.042	0.042		Right	/	0.041	0.041
	Top	0.130	0.120	0.250		Top	0.130	0.061	0.191
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 4	Front	0.068	0.040	0.108	LTE Band 4	Front	0.068	0.025	0.093
	Back	0.086	0.056	0.142		Back	0.086	0.073	0.159
	Left	0.077	/	0.077		Left	0.077	/	0.077
	Right	/	0.042	0.042		Right	/	0.041	0.041
	Top	0.146	0.120	0.266		Top	0.146	0.061	0.207
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 5	Front	0.087	0.040	0.127	LTE Band 5	Front	0.087	0.025	0.112
	Back	0.113	0.056	0.169		Back	0.113	0.073	0.186
	Left	0.069	/	0.069		Left	0.069	/	0.069
	Right	/	0.042	0.042		Right	/	0.041	0.041
	Top	0.094	0.120	0.214		Top	0.094	0.061	0.155
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 7	Front	0.046	0.040	0.086	LTE Band 7	Front	0.046	0.025	0.071
	Back	0.191	0.056	0.247		Back	0.191	0.073	0.264
	Left	0.091	/	0.091		Left	0.091	/	0.091
	Right	/	0.042	0.042		Right	/	0.041	0.041
	Top	0.109	0.120	0.229		Top	0.109	0.061	0.170
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 38	Front	0.045	0.040	0.085	LTE Band 38	Front	0.045	0.025	0.070
	Back	0.074	0.056	0.130		Back	0.074	0.073	0.147
	Left	0.029	/	0.029		Left	0.029	/	0.029
	Right	/	0.042	0.042		Right	/	0.041	0.041
	Top	0.032	0.120	0.152		Top	0.032	0.061	0.093
	Bottom	/	/	/		Bottom	/	/	/

WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.2GHz WLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)	WWAN Mode	Position	WWAN SAR _{1g} (W/kg)	5.8GHzWLAN SAR _{1g} (W/kg)	Σ SAR (W/kg)
LTE Band 41	Front	0.039	0.040	0.079	LTE Band 41	Front	0.039	0.025	0.064
	Back	0.069	0.056	0.125		Back	0.069	0.073	0.142
	Left	0.022	/	0.022		Left	0.022	/	0.022
	Right	/	0.042	0.042		Right	/	0.041	0.041
	Top	0.027	0.120	0.147		Top	0.027	0.061	0.088
	Bottom	/	/	/		Bottom	/	/	/

➤ **Simultaneous Transmission Conclusion**

The above numerical summed SAR results for all the case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06.

15.6 Measurement Uncertainty

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A Type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in below Table.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor	1/k(b)	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

Uncertainty Component	Section	Uncert. Value	Prob. Dist.	Div.	(C _i) (1 g)	(C _i) (10 g)	Std. Unc. (1 g)	Std. Unc. (10 g)	V _i
Measurement System									
Probe Calibration	E.2.1	±7.4%	N	1	1	1	±7.4%	±7.4%	∞
Axial Isotropy	E.2.2	±1.2%	R	$\sqrt{3}$	0.7	0.7	±0.49%	±0.49%	∞
Hemispherical Isotropy	E.2.2	±0.9%	R	$\sqrt{3}$	0.7	0.7	±0.36%	±0.36%	∞
Boundary Effects	E.2.3	±1.0%	R	$\sqrt{3}$	1	1	±0.58%	±0.58%	∞
Linearity	E.2.4	±0.9%	R	$\sqrt{3}$	1	1	±0.52%	±0.52%	∞
System Detection Limits	E.2.5	±0.25%	R	$\sqrt{3}$	1	1	±0.14%	±0.14%	∞
Readout Electronics	E.2.6	±0.3%	N	1	1	1	±0.3%	±0.3%	∞
Response Time	E.2.7	±0.8%	R	$\sqrt{3}$	1	1	±0.46%	±0.46%	∞
Integration Time	E.2.8	±2.6%	R	$\sqrt{3}$	1	1	±1.5%	±1.5%	∞
RF Ambient Noise	E.6.1	±3.0%	R	$\sqrt{3}$	1	1	±1.73%	±1.73%	∞
RF Ambient Reflections	E.6.1	±3.0%	R	$\sqrt{3}$	1	1	±1.73%	±1.73%	∞
Probe positioner mechanical tolerances	E.6.2	±0.4%	R	$\sqrt{3}$	1	1	±0.23%	±0.23%	∞
Probe positioning tolerance with respect to the phantom shell surface	E.6.3	±2.9%	R	$\sqrt{3}$	1	1	±1.68%	±1.68%	∞
Interpolation, extrapolation, and integration algorithm For max. SAR Evaluation.	E.5	±1.0%	R	$\sqrt{3}$	1	1	±0.58%	±0.58%	∞
Test Sample Related									
Device Positioning	E.4.2	±4.6%	N	1	1	1	±4.6%	±4.6%	M-1
Device Holder	E.4.1	±5.2%	N	1	1	1	±5.2%	±5.2%	M-1
Power Drift	6.6.2	±5.0%	R	$\sqrt{3}$	1	1	±2.89%	±2.89%	∞
Phantom and Setup									
Phantom Uncertainty	E.3.1	±4.0%	R	$\sqrt{3}$	1	1	±2.31%	±2.31%	∞
Liquid conductivity (measured value)	E.3.3	±3.33%	N	1	0.78	0.71	±2.6%	±2.6%	M
Liquid dielectric constant (measured value)	E.3.3	±3.25%	N	1	0.23	0.26	±0.75%	±0.85%	M
Liquid Conductivity - Temperature Uncertainty	E.3.4	±1.3%	R	$\sqrt{3}$	0.78	0.71	±0.59%	±0.53%	∞
Liquid Dielectric Constant - Temperature Uncertainty	E.3.4	±1.1%	R	$\sqrt{3}$	0.23	0.26	±0.15%	±0.17%	∞
Combined Standard Uncertainty (RSS)							±11.56%	±11.50%	
Expanded Uncertainty (95% Confidence Level, k = 2)							±23.11%	±23.0%	

Uncertainty Budget for frequency range 300 MHz to 3 GHz according to IEEE1528-2013

15.7 Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of the FCC and Industry Canada, with respect to all parameters subject to this test. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested. Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables.

16 Reference

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- [3]. IEEE Std. 1528-2013, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, September 2013
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- [7]. FCC KDB 648474 D04 v01r03, “SAR EVALUATION CONSIDERATIONS FOR WIRELESS HANDSETS”, October 2015
- [8]. FCC KDB 941225 D01 v03r01, “3G SAR MEASUREMENT PROCEDURES”, October 2015
- [9]. FCC KDB 941225 D05 v02r05, “SAR EVALUATION CONSIDERATIONS FOR LTE DEVICES”, Dec 2015
- [10]. FCC KDB 941225 D03 v01, “Recommended SAR Test Reduction Procedures for GSM / GPRS / EDGE”, December 2008
- [11]. FCC KDB 941225 D06 v02r01, “SAR EVALUATION PROCEDURES FOR PORTABLE DEVICES WITH WIRELESS ROUTER CAPABILITIES”, October 2015
- [12]. FCC KDB 865664 D01 v01r04, “SAR MEASUREMENT REQUIREMENTS FOR 100 MHz TO 6 GHz”, August 2015

Appendix A: Plots of SAR System Check

Test Laboratory: JYTSZ

Date/Time: 01.10.2021 08:19:24

DUT: Dipole 835 MHz; Type: D835V2; Serial: SN:4d154

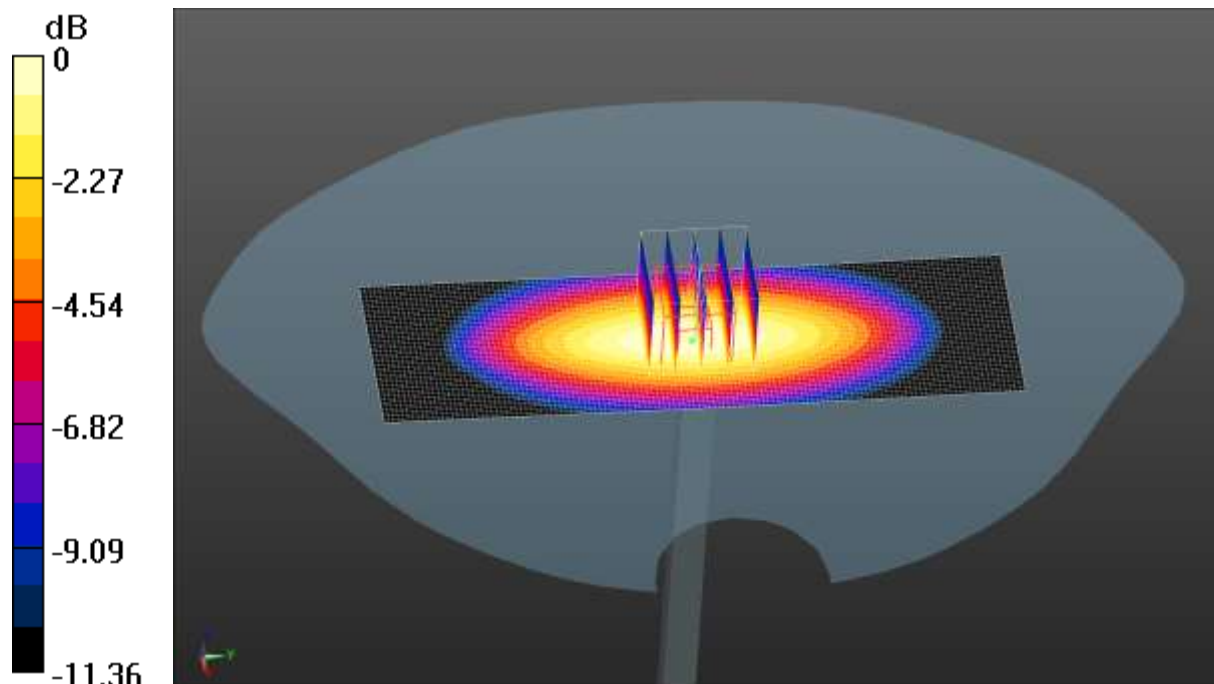
Communication System: UID 0, CW (0); Frequency: 835 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.924 \text{ S/m}$; $\epsilon_r = 41.527$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(9.71, 9.71, 9.71); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequency 835 MHz Head Tissue/d=15mm, Pin=80 mW, dist=2.0mm (EX-Probe)/Area Scan (41x131x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
 Maximum value of SAR (interpolated) = 1.21 W/kg

System Performance Check at Frequency 835 MHz Head Tissue/d=15mm, Pin=80 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (5x5x7)/Cube 0:
 Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
 Reference Value = 33.29 V/m; Power Drift = -0.08 dB
 Peak SAR (extrapolated) = 1.46 W/kg
SAR(1 g) = 0.791 W/kg; SAR(10 g) = 0.512 W/kg
 Maximum value of SAR (measured) = 1.32W/kg



0 dB = 1.32W/kg = 1.21 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.13.2021 08:10:05

DUT: Dipole 1800 MHz; Type: SID1800; Serial: SN:09/15 DIP IG800-360

Communication System: UID 0, CW (0); Frequency: 1800 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1800 \text{ MHz}$; $\sigma = 1.374 \text{ S/m}$; $\epsilon_r = 39.198$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY5 Configuration:

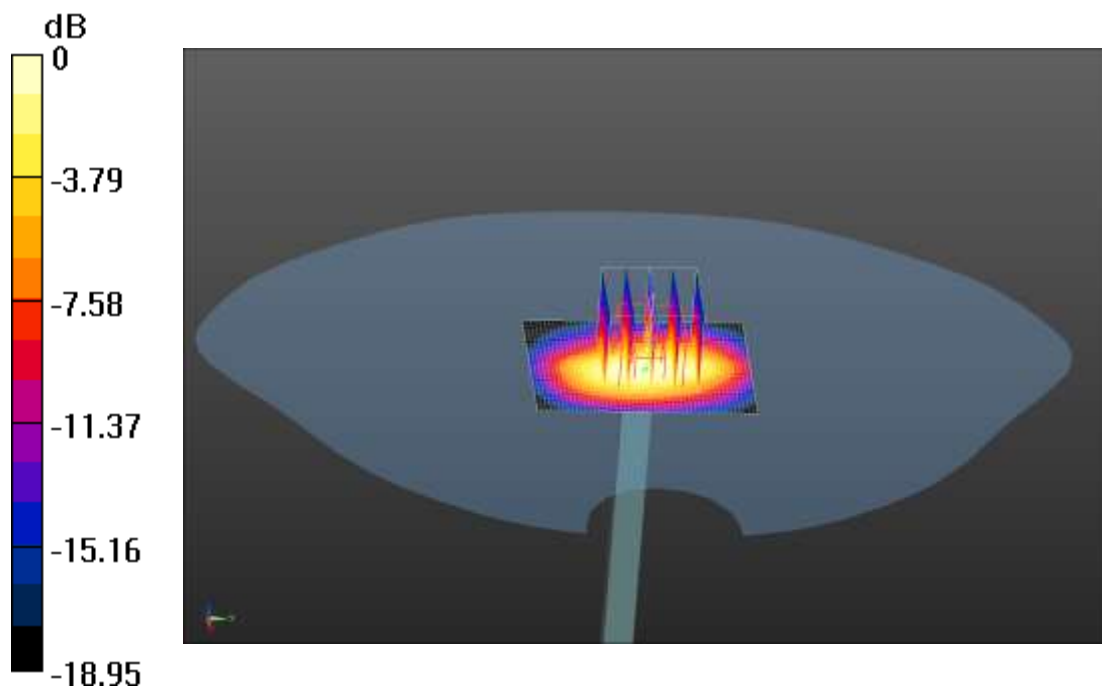
- Probe: EX3DV4 - SN3924; ConvF(8.43, 8.43, 8.43); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequency 1800MHz Head Tissue/d=10mm, Pin=40 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 41.52 V/m; Power Drift = 0.11 dB
 Peak SAR (extrapolated) = 3.19 W/kg
SAR(1 g) = 1.52 W/kg; SAR(10 g) = 0.794 W/kg
 Maximum value of SAR (measured) = 2.37 W/kg

System Performance Check at Frequency 1800MHz Head Tissue/d=10mm, Pin=40 mW, dist=2.0mm (EX-Probe)/Area Scan (41x51x1): Interpolated grid:

dx=1.500 mm, dy=1.500 mm
 Maximum value of SAR (interpolated) = 2.21 W/kg



0 dB = 2.21 W/kg = 3.44 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.13.2021 08:22:03

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d175

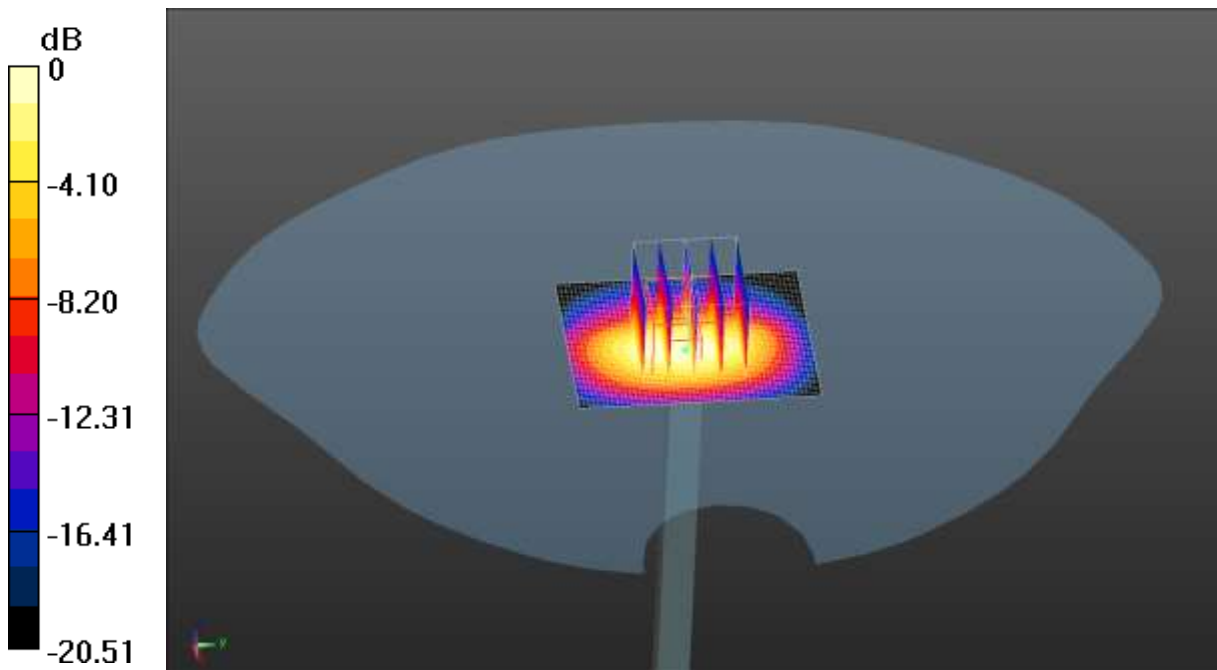
Communication System: UID 0, CW (0); Frequency: 1900 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.431 \text{ S/m}$; $\epsilon_r = 38.946$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequency 1900MHz Head Tissue/d=10mm, Pin=40 mW, dist=2.0mm (EX-Probe)/Area Scan (41x51x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
 Maximum value of SAR (interpolated) = 2.64 W/kg

System Performance Check at Frequency 1900MHz Head Tissue/d=10mm, Pin=40 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (5x5x7)/Cube 0:
 Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
 Reference Value = 40.51 V/m; Power Drift = -0.09 dB
 Peak SAR (extrapolated) = 3.42 W/kg
SAR(1 g) = 1.61 W/kg; SAR(10 g) = 0.829 W/kg
 Maximum value of SAR (measured) = 2.42 W/kg



0 dB = 2.42 W/kg = 3.84 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.22.2021 08:08:39

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: SN:910

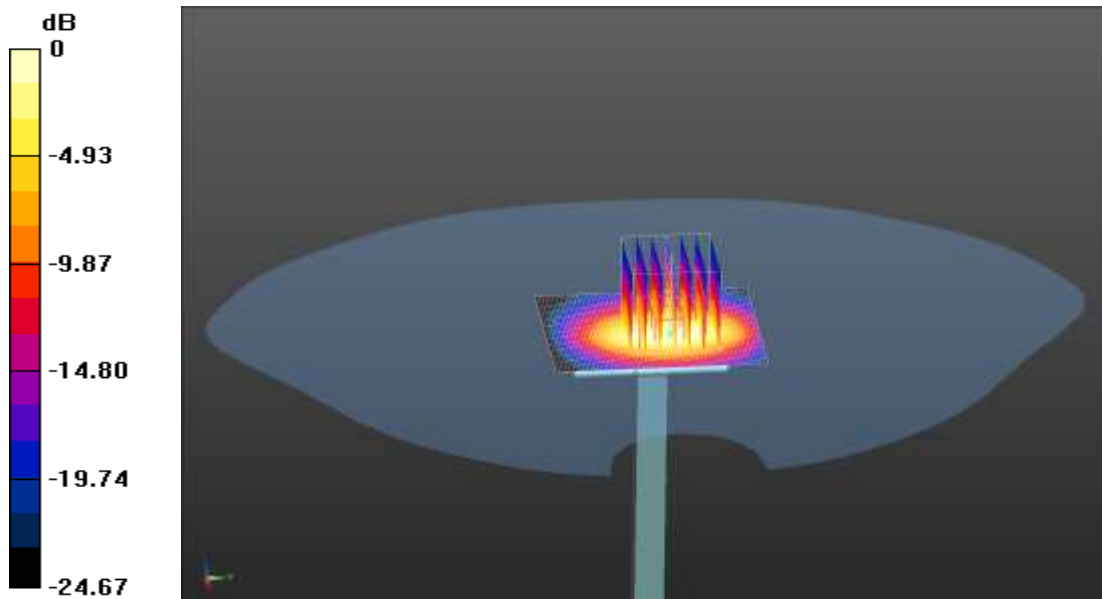
Communication System: UID 0, CW (0); Frequency: 2450 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.88$ S/m; $\epsilon_r = 38.844$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.58, 7.58, 7.58); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequency 2450MHz Head Tissue/d=10mm, Pin=40 mW, dist=2.0mm (EX-Probe)/Area Scan (51x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
 Maximum value of SAR (interpolated) = 3.96 W/kg

System Performance Check at Frequency 2450MHz Head Tissue/d=10mm, Pin=40 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:
 Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 42.95 V/m; Power Drift = 0.06 dB
 Peak SAR (extrapolated) = 4.58 W/kg
SAR(1 g) = 2.14 W/kg; SAR(10 g) = 0.972 W/kg
 Maximum value of SAR (measured) = 3.39 W/kg



0 dB = 3.39 W/kg = 5.30 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.22.2021 08:21:36

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: SN: 1114

Communication System: UID 0, CW (0); Frequency: 2600 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2600$ MHz; $\sigma = 2.019$ S/m; $\epsilon_r = 38.183$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY5 Configuration:

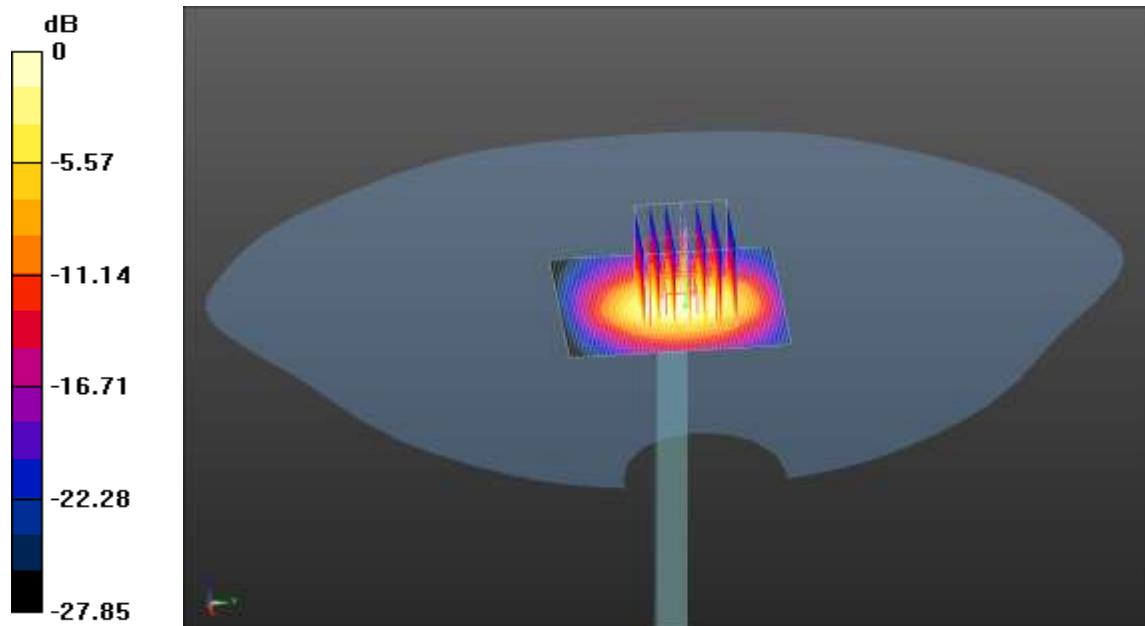
- Probe: EX3DV4 - SN3924; ConvF(7.35, 7.35, 7.35); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequency 2600MHz Head Tissue/d=10mm, Pin=40 mW, dist=2.0mm (EX-Probe)/Zoom Scan(7X7X7) (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 43.91 V/m; Power Drift = -0.13 dB
 Peak SAR (extrapolated) = 4.87 W/kg
SAR(1 g) = 2.18 W/kg; SAR(10 g) = 0.982 W/kg
 Maximum value of SAR (measured) = 3.79 W/kg

System Performance Check at Frequency 2600MHz Head Tissue/d=10mm, Pin=40 mW, dist=2.0mm (EX-Probe)/Area Scan (51x61x1): Interpolated grid:

dx=1.200 mm, dy=1.200 mm
 Maximum value of SAR (interpolated) = 4.31 W/kg



0 dB = 4.31 W/kg = 6.34 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.18.2021 08:16:12

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: SN:1182

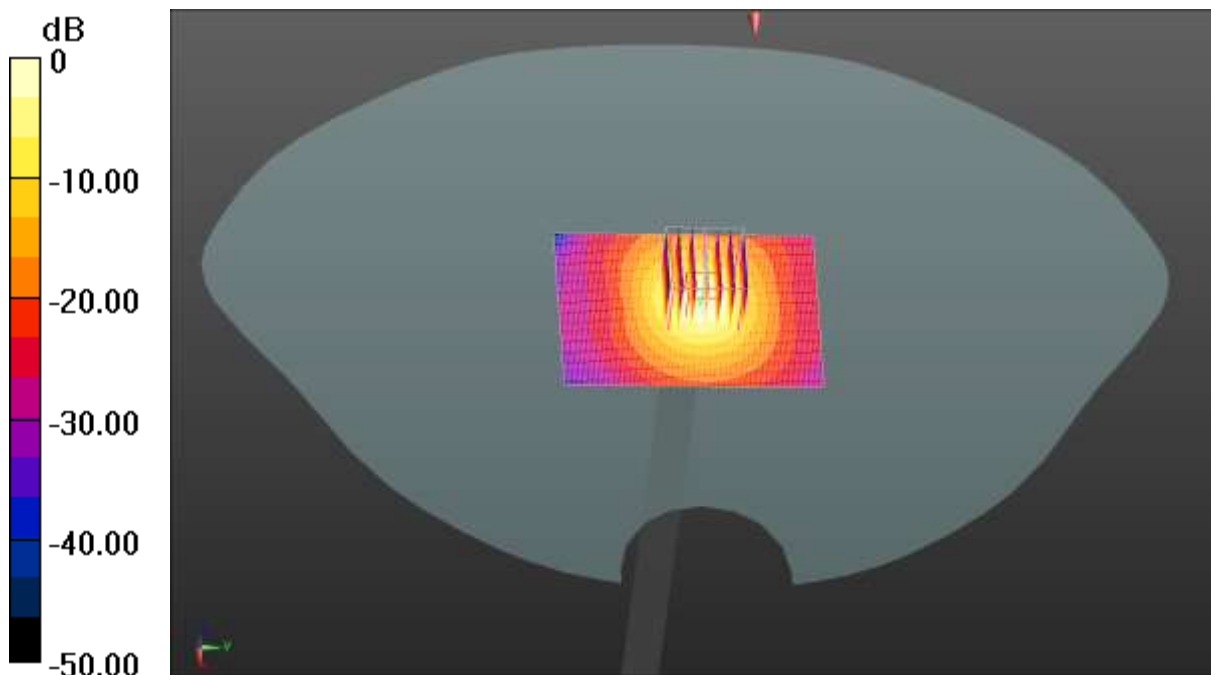
Communication System: UID 0, CW (0); Frequency: 5200 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 5200$ MHz; $\sigma = 4.496$ S/m; $\epsilon_r = 35.877$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(5.42, 5.42, 5.42); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequency 5GHz Head Tissue/d=10mm, Pin=80 mW, dist=2.0mm (EX-Probe)/Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
 Maximum value of SAR (interpolated) = 16.02 W/kg

System Performance Check at Frequency 5GHz Head Tissue/d=10mm, Pin=80 mW, dist=2.0mm (EX-Probe)/Zoom Scan (8x8x7) (7x7x12)/Cube 0:
 Measurement grid: dx=4mm, dy=4mm, dz=2mm
 Reference Value = 47.21V/m; Power Drift = 0.05 dB
 Peak SAR (extrapolated) = 28.43W/kg
SAR(1 g) = 6.28 W/kg; SAR(10 g) = 1.85 W/kg
 Maximum value of SAR (measured) = 16.04 W/kg



0 dB = 16.04 W/kg = 12.15 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.18.2021 08:44:58

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: SN:1182

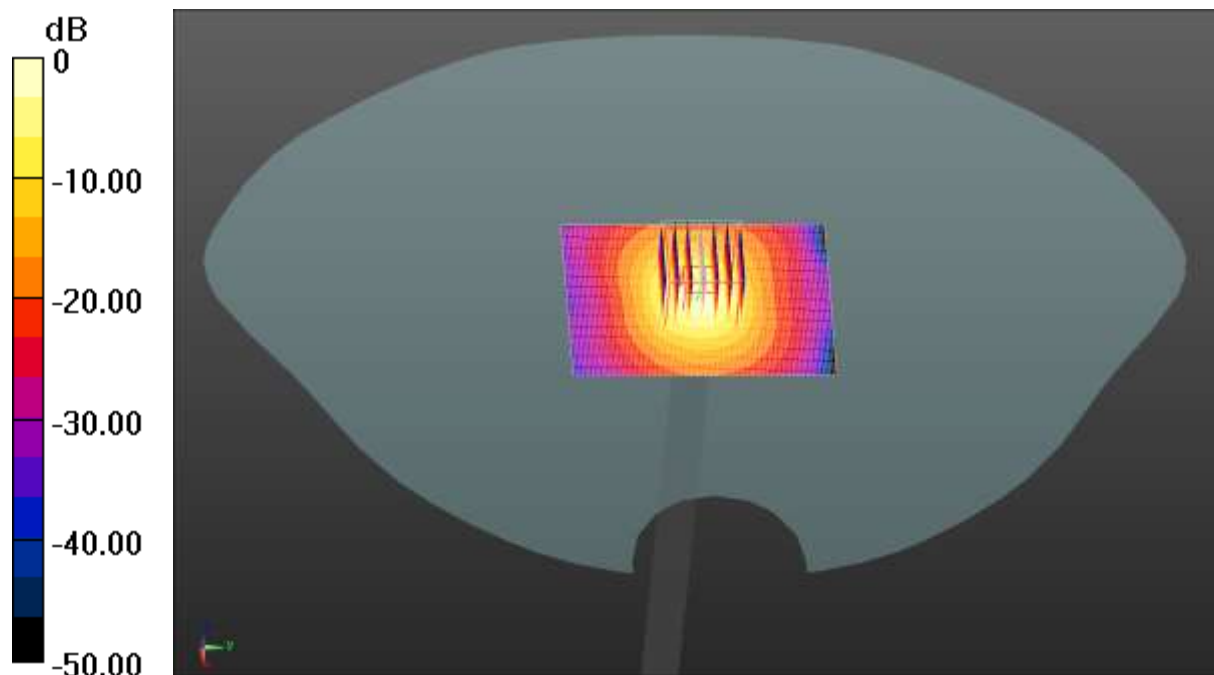
Communication System: UID 0, CW (0); Frequency: 5800 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 5800 \text{ MHz}$; $\sigma = 5.192 \text{ S/m}$; $\epsilon_r = 34.351$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(4.96, 4.96, 4.96); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequency 5GHz Head Tissue/d=10mm, Pin=80 mW, dist=2.0mm (EX-Probe)/Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
 Maximum value of SAR (interpolated) = 18.23 W/kg

System Performance Check at Frequency 5GHz Head Tissue/d=10mm, Pin=80 mW, dist=2.0mm (EX-Probe)/Zoom Scan (8x8x7) (7x7x12)/Cube 0:
 Measurement grid: dx=4mm, dy=4mm, dz=2mm
 Reference Value = 51.27 V/m; Power Drift = -0.12 dB
 Peak SAR (extrapolated) = 31.61 W/kg
SAR(1 g) = 6.47 W/kg; SAR(10 g) = 1.81 W/kg
 Maximum value of SAR (measured) = 18.69 W/kg



0 dB = 18.69 W/kg = 12.72 dBW/kg

Appendix B: Plots of SAR Test Data

Test Laboratory: JYTSZ

Date/Time: 01.10.2021 09:01:10

DUT: Mobile Phone; Type: X659B; Serial: 4#

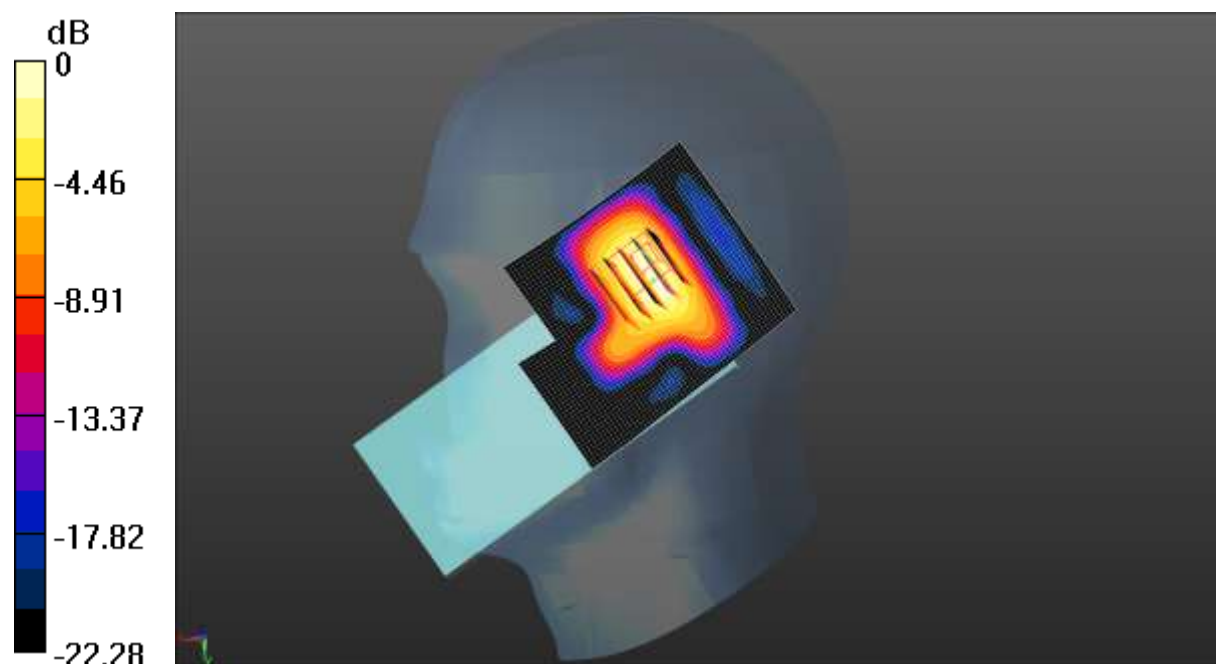
Communication System: UID 0, GSM (0); Frequency: 836.6 MHz; Duty Cycle: 1:8.30042
 Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.924$ S/m; $\epsilon_r = 41.527$; $\rho = 1000$ kg/m³
 Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(9.71, 9.71, 9.71); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

GSM 850 Right Cheek/Middle Channel/Area Scan (51x61x1): Interpolated grid:
 $dx=1.500$ mm, $dy=1.500$ mm
 Maximum value of SAR (interpolated) = 0.237 W/kg

GSM 850 Right Cheek/Middle Channel/Zoom Scan (5x5x7)/Cube 0:
 Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm
 Reference Value = 13.39 V/m; Power Drift = -0.13 dB
 Peak SAR (extrapolated) = 0.0250 W/kg
SAR(1 g) = 0.014 W/kg; SAR(10 g) = 0.00832 W/kg
 Maximum value of SAR (measured) = 0.0207 W/kg



0 dB = 0.0207 W/kg = -16.84 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.13.2021 08:58:46

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, GSM (0); Frequency: 1880 MHz; Duty Cycle: 1:8.30042
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.432$ S/m; $\epsilon_r = 39.029$; $\rho = 1000$ kg/m³
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

GSM 1900 Right Tilted/Middle Channel/Area Scan (51x61x1): Interpolated grid:

dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.451 W/kg

GSM 1900 Right Tilted/Middle Channel/Zoom Scan (5x5x7)/Cube 0:

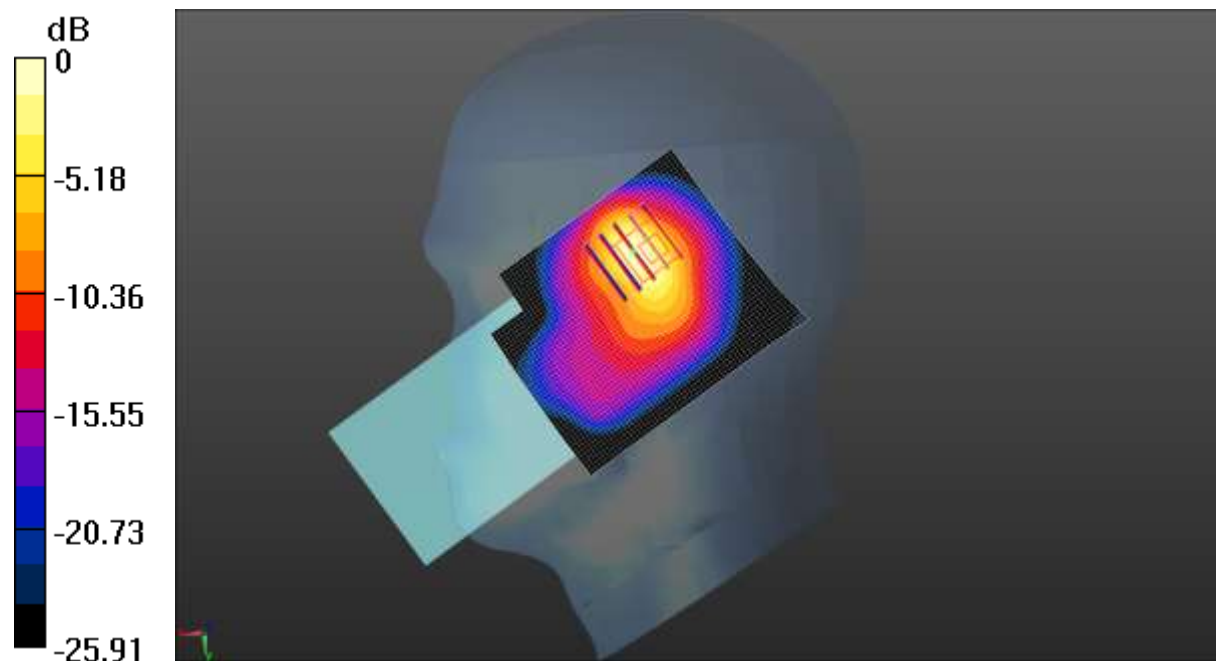
Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.65 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 0.672 W/kg

SAR(1 g) = 0.319 W/kg; SAR(10 g) = 0.135 W/kg

Maximum value of SAR (measured) = 0.542 W/kg



0 dB = 0.542 W/kg = -2.66 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.10.2021 11:09:38

DUT: Mobile Phone; Type: X659B; Serial: 4#

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

Medium parameters used (interpolated): $f = 826.4$ MHz; $\sigma = 0.917$ S/m; $\epsilon_r = 41.635$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(9.71, 9.71, 9.71); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA 850 Right Cheek/Low Channel/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.865 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.0190 W/kg

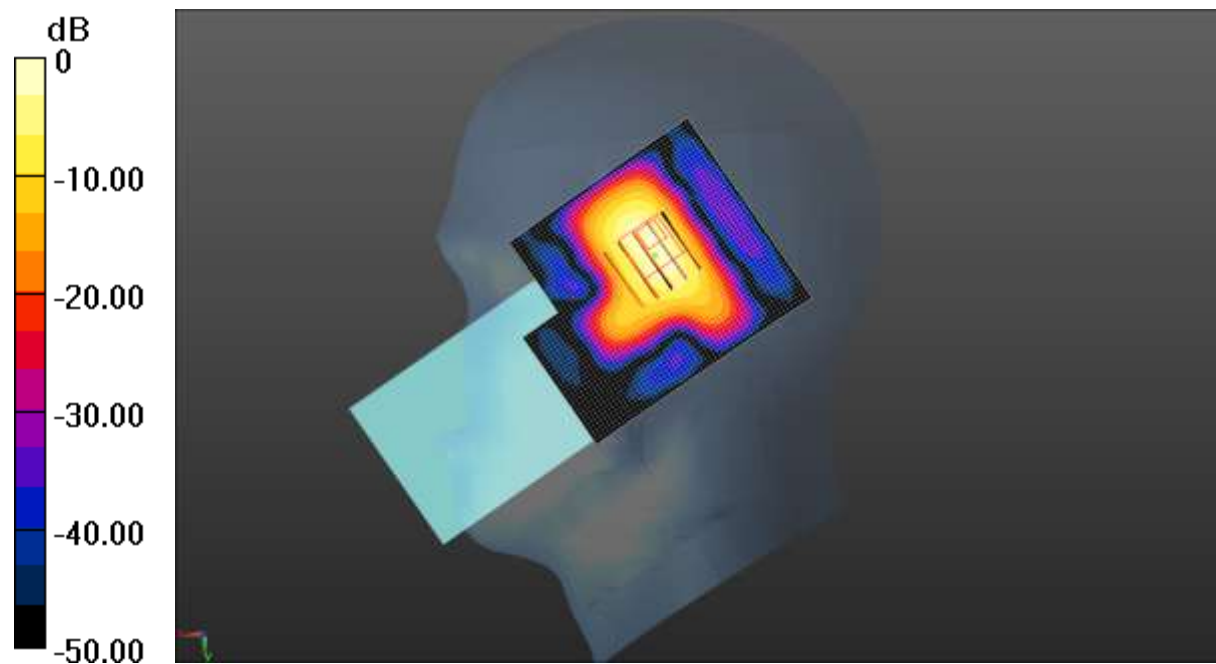
SAR(1 g) = 0.00605 W/kg; SAR(10 g) = 0.00241 W/kg

Maximum value of SAR (measured) = 0.0105 W/kg

WCDMA 850 Right Cheek/Low Channel/Area Scan (51x61x1): Interpolated grid:

dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.0214 W/kg



Test Laboratory: JYTSZ

Date/Time: 01.13.2021 11:19:03

DUT: Mobile Phone; Type: X659B; Serial: 4#

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

Medium parameters used (interpolated): $f = 1907.6 \text{ MHz}$; $\sigma = 1.436 \text{ S/m}$; $\epsilon_r = 38.872$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA 1900 Right Tilted/High Channel/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 11.42 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.624 W/kg

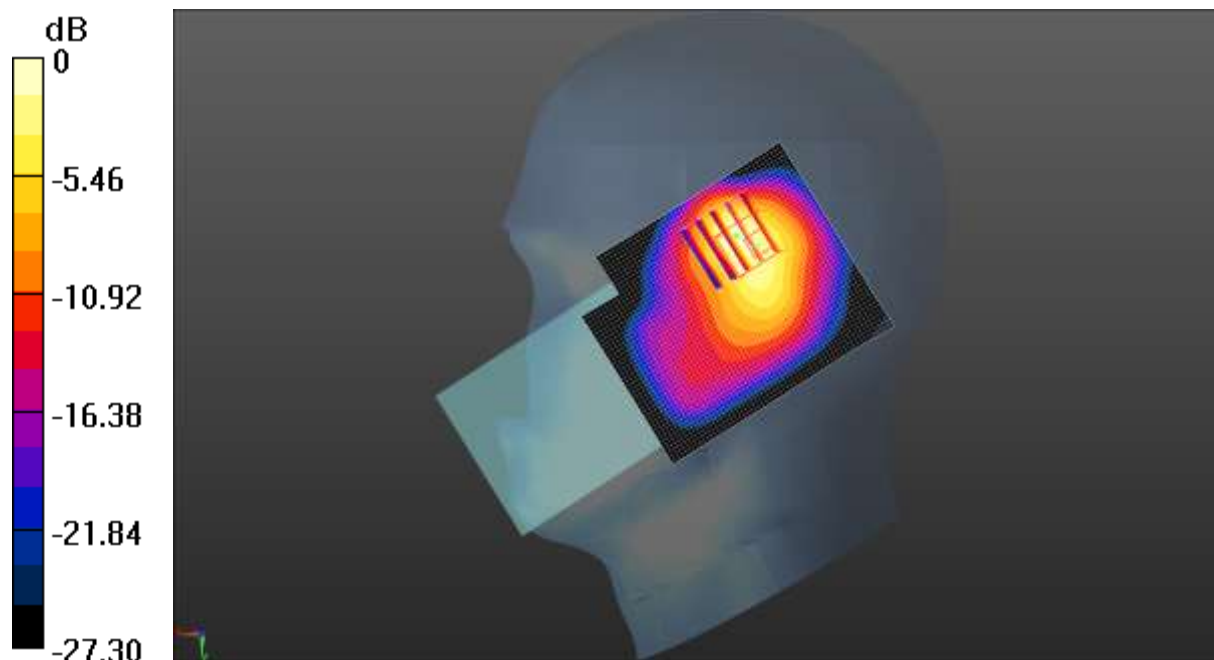
SAR(1 g) = 0.294 W/kg; SAR(10 g) = 0.124 W/kg

Maximum value of SAR (measured) = 0.522 W/kg

WCDMA 1900 Right Tilted/High Channel/Area Scan (51x61x1): Interpolated

grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.356 W/kg



0 dB = 0.356 W/kg = -4.49 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.13.2021 13:11:28

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 1880 MHz;
Duty Cycle: 1:1

Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.432 \text{ S/m}$; $\epsilon_r = 39.029$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Right Section

DASY5 Configuration:

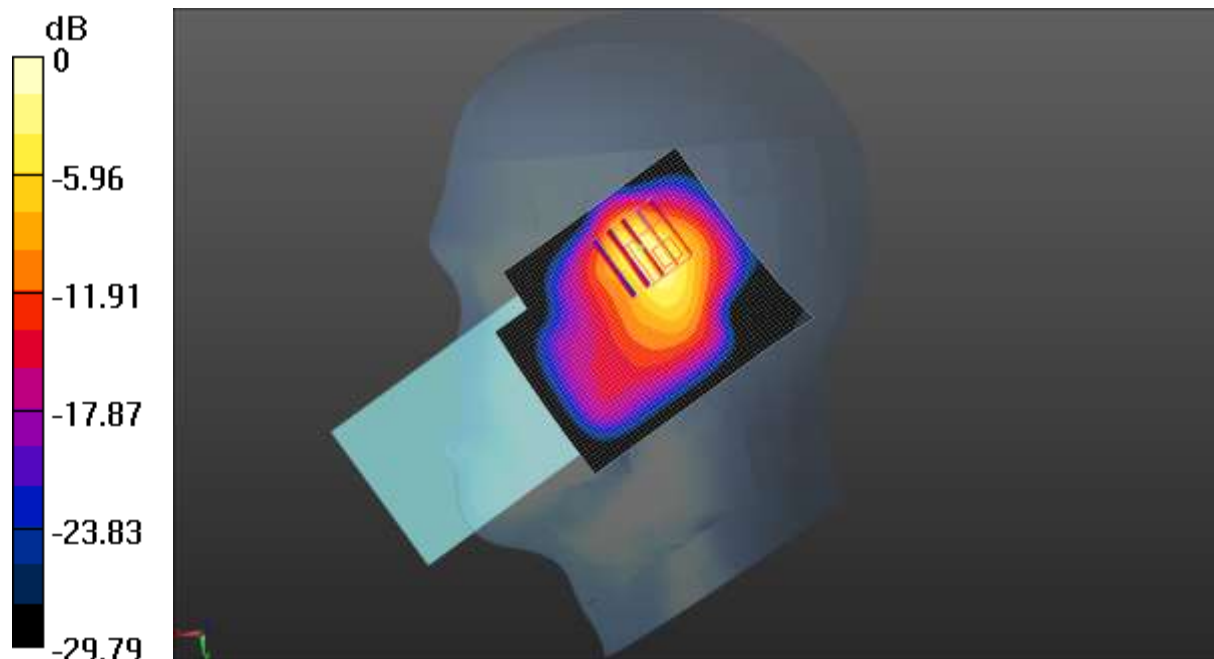
- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 2 1RB(20MHz) Right Tilted/Middle Channel/Area Scan (51x61x1):

Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
Maximum value of SAR (interpolated) = 0.284 W/kg

LTE Band 2 1RB(20MHz) Right Tilted/Middle Channel/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 10.94 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 0.537 W/kg
SAR(1 g) = 0.254 W/kg; SAR(10 g) = 0.108 W/kg
Maximum value of SAR (measured) = 0.451 W/kg



0 dB = 0.451 W/kg = -3.46 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.13.2021 19:24:33

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 1732.5 MHz;
Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.317$ S/m; $\epsilon_r = 39.749$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.43, 8.43, 8.43); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 4 1RB(20MHz) Right Tilted/Middle Channel/Zoom Scan

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

Reference Value = 11.05 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 0.595 W/kg

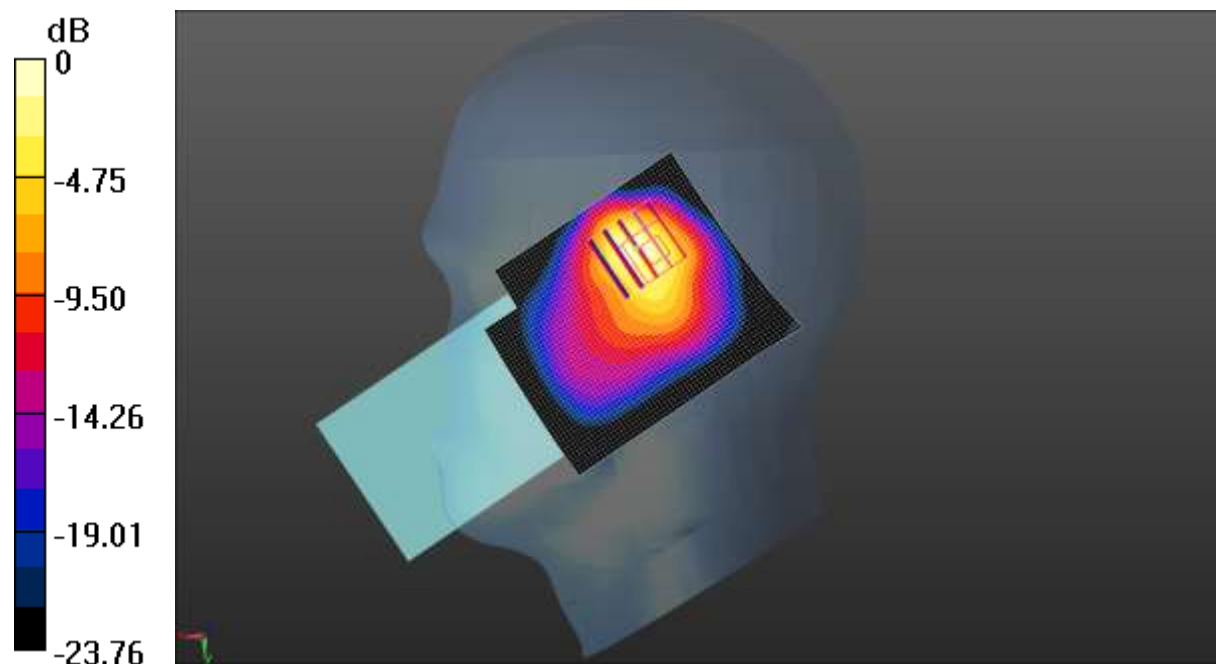
SAR(1 g) = 0.289 W/kg; SAR(10 g) = 0.128 W/kg

Maximum value of SAR (measured) = 0.481 W/kg

LTE Band 4 1RB(20MHz) Right Tilted/Middle Channel/Area Scan (51x61x1):

Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.350 W/kg



0 dB = 0.350 W/kg = -4.56 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.22.2021 11:26:57

DUT: Mobile Phone; Type: X659B; Serial: 4#Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 2560 MHz;
Duty Cycle: 1:1Medium parameters used: $f = 2560$ MHz; $\sigma = 1.965$ S/m; $\epsilon_r = 38.436$; $\rho = 1000$ kg/m³
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.35, 7.35, 7.35); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 7 1RB(20MHz) Right Cheek/High Channel/Zoom Scan**(5x5x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.246 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.491 W/kg

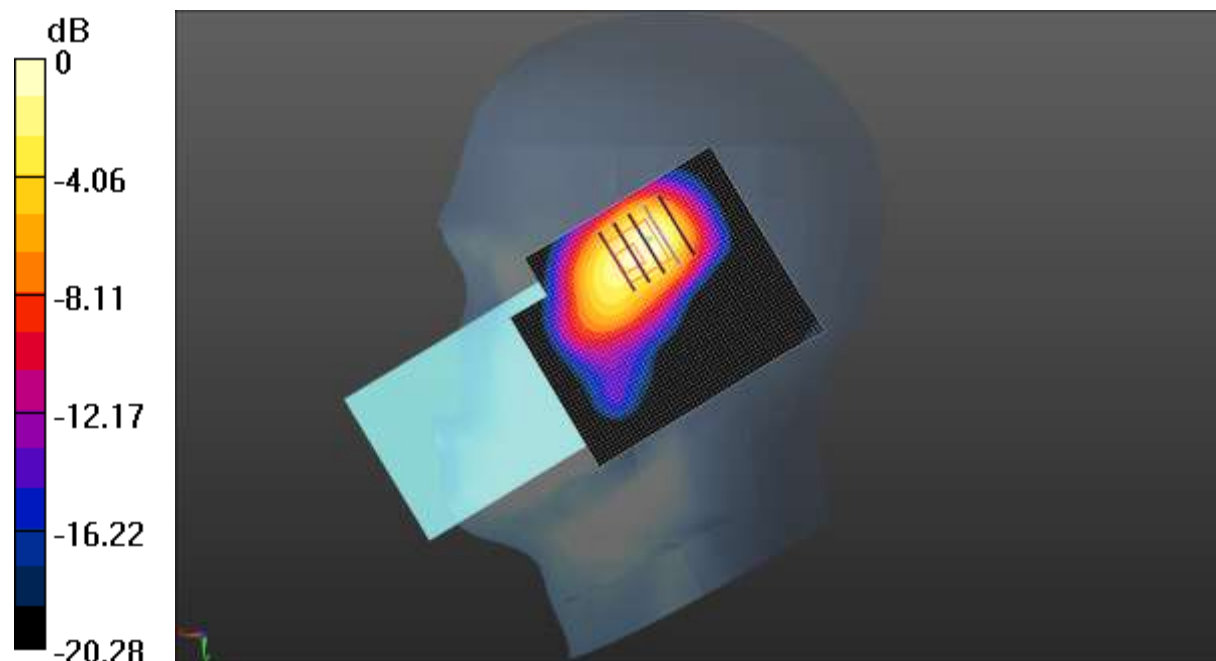
SAR(1 g) = 0.205 W/kg; SAR(10 g) = 0.105 W/kg

Maximum value of SAR (measured) = 0.364 W/kg

LTE Band 7 1RB(20MHz) Right Cheek/High Channel/Area Scan (51x61x1):

Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.462 W/kg



Test Laboratory: JYTSZ

Date/Time: 01.10.2021 13:22:46

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 844 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 844$ MHz; $\sigma = 0.931$ S/m; $\epsilon_r = 40.42$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(9.71, 9.71, 9.71); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 5 1RB(10MHz) Right Cheek/High Channel/Area Scan (51x61x1):

Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

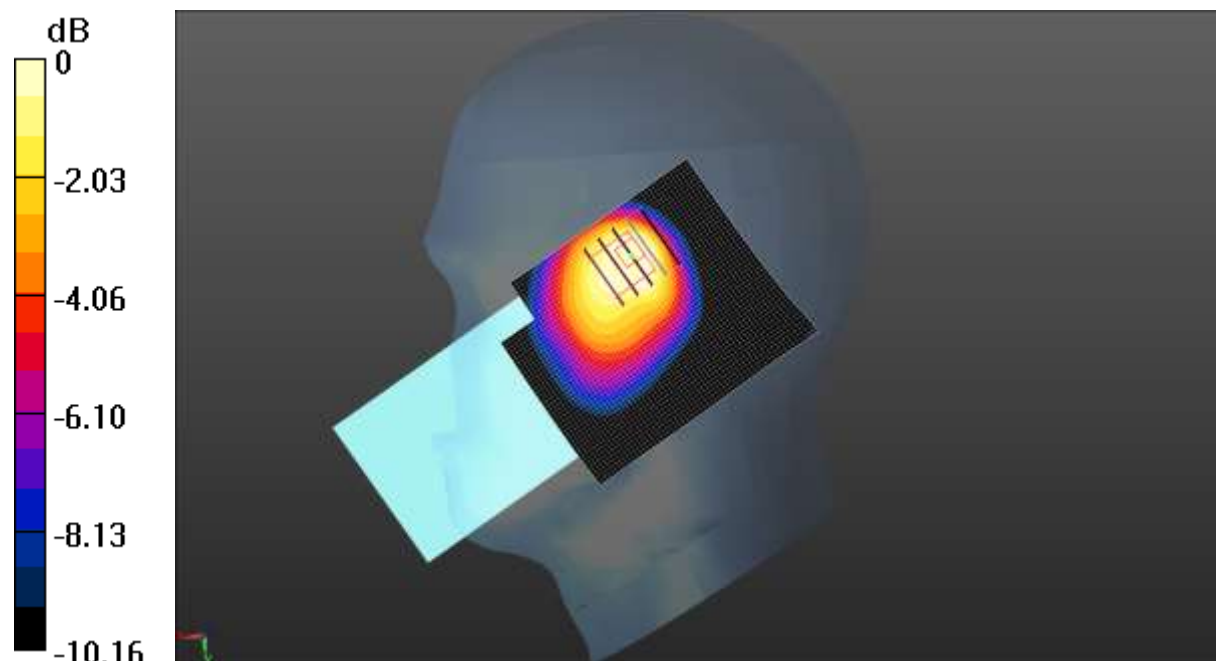
LTE Band 5 1RB(10MHz) Right Cheek/High Channel/Zoom Scan**(5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.56 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.517 W/kg

SAR(1 g) = 0.232 W/kg; SAR(10 g) = 0.146 W/kg

Maximum value of SAR (measured) = 0.342 W/kg



0 dB = 0.342 W/kg = -4.66 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.22.2021 18:28:34

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-TDD(USA) 20MHz 1RB QPSK (0); Frequency: 2610 MHz; Duty Cycle: 1:1.59956

Medium parameters used: $f = 2610$ MHz; $\sigma = 2.032$ S/m; $\epsilon_r = 38.114$; $\rho = 1000$ kg/m³
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.35, 7.35, 7.35); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 38 1RB(20MHz) Right Cheek/High Channel/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.442 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 0.179 W/kg

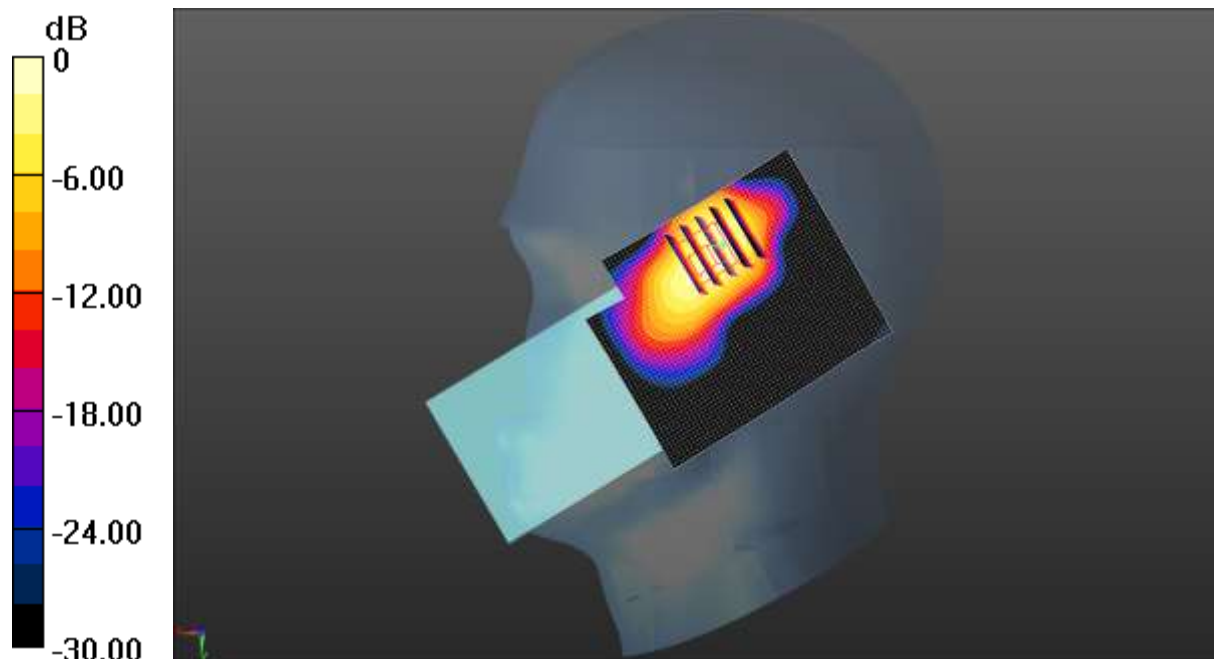
SAR(1 g) = 0.080 W/kg; SAR(10 g) = 0.039 W/kg

Maximum value of SAR (measured) = 0.130 W/kg

LTE Band 38 1RB(20MHz) Right Cheek/High Channel/Area Scan (51x61x1):

Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.223 W/kg



0 dB = 0.223 W/kg = -6.52 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.22.2021 19:36:29

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-TDD(USA) 20MHz 1RB QPSK (0); Frequency: 2645 MHz; Duty Cycle: 1:1.59956

Medium parameters used (interpolated): $f = 2645$ MHz; $\sigma = 2.078$ S/m; $\epsilon_r = 37.956$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.35, 7.35, 7.35); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 41 1RB(20MHz) Right Cheek/High Channel/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.230 V/m; Power Drift = -0.29 dB

Peak SAR (extrapolated) = 0.152 W/kg

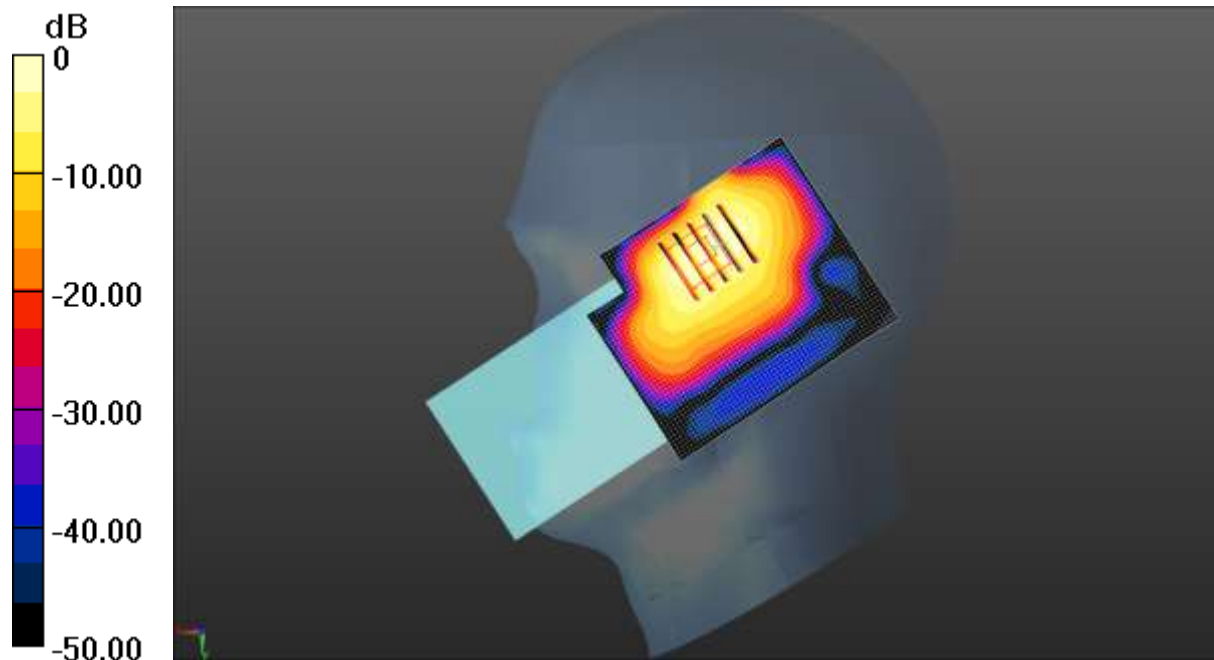
SAR(1 g) = 0.085 W/kg; SAR(10 g) = 0.039 W/kg

Maximum value of SAR (measured) = 0.129 W/kg

LTE Band 41 1RB(20MHz) Right Cheek/High Channel/Area Scan (51x61x1):

Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.219 W/kg



0 dB = 0.219 W/kg = -6.60 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.13.2021 14:40:28

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-FDD(USA) 20MHz 50%RB QPSK (0); Frequency: 1880 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.432$ S/m; $\epsilon_r = 39.029$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 2 50%RB(20MHz) Right Tilted/Middle Channel/Zoom Scan**(5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.274 V/m; Power Drift = -0.11 dB

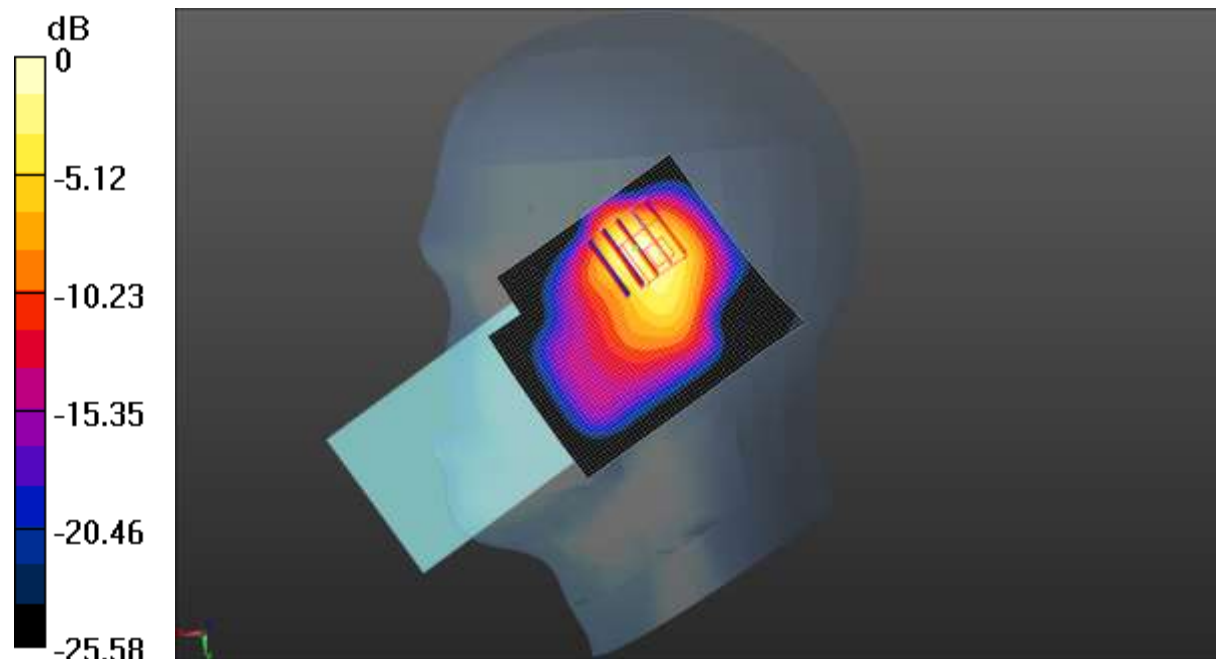
Peak SAR (extrapolated) = 0.448 W/kg

SAR(1 g) = 0.211 W/kg; SAR(10 g) = 0.091 W/kg

Maximum value of SAR (measured) = 0.374 W/kg

LTE Band 2 50%RB(20MHz) Right Tilted/Middle Channel/Area Scan**(51x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.241 W/kg



0 dB = 0.241 W/kg = -6.18 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.13.2021 20:44:06

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-FDD(USA) 20MHz 50%RB QPSK (0); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.317$ S/m; $\epsilon_r = 39.749$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.43, 8.43, 8.43); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 4 50%RB(20MHz) Right Tilted/Middle Channel/Zoom Scan**(5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.23 V/m; Power Drift = 0.12 dB

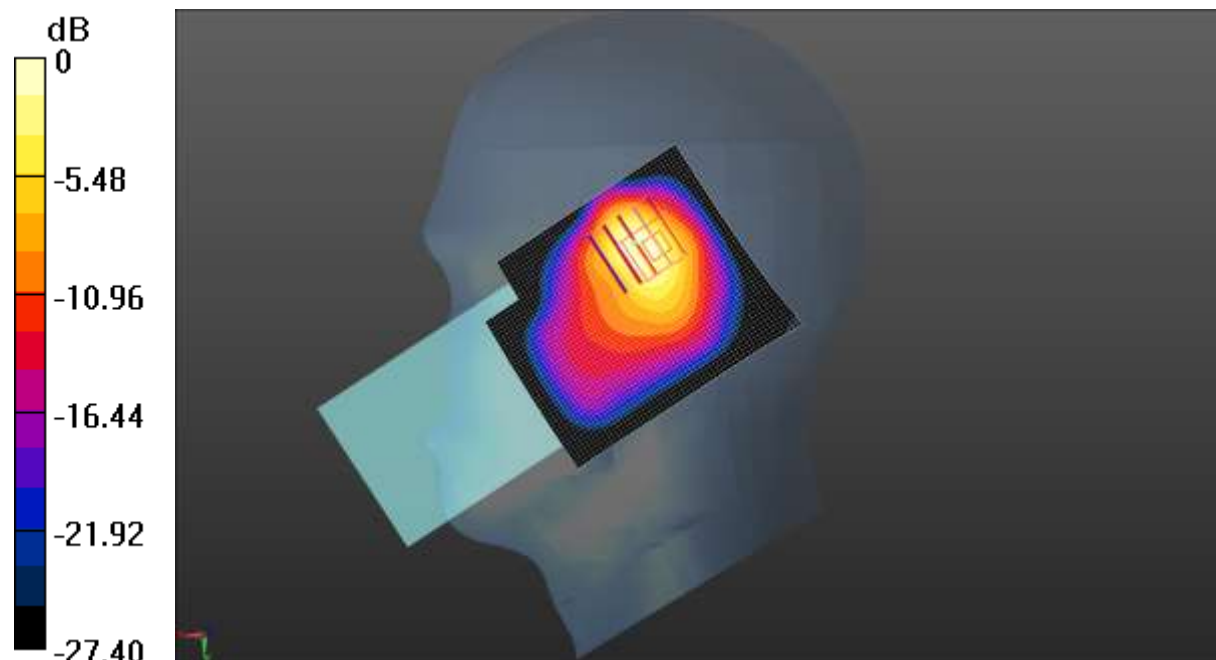
Peak SAR (extrapolated) = 0.428 W/kg

SAR(1 g) = 0.211 W/kg; SAR(10 g) = 0.094 W/kg

Maximum value of SAR (measured) = 0.353 W/kg

LTE Band 4 50%RB(20MHz) Right Tilted/Middle Channel/Area Scan**(51x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.302 W/kg



0 dB = 0.302 W/kg = -5.20 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.22.2021 12:10:35

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-FDD(USA) 20MHz 50%RB QPSK (0); Frequency: 2560 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2560$ MHz; $\sigma = 1.965$ S/m; $\epsilon_r = 38.436$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.35, 7.35, 7.35); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 7 50%RB(20MHz) Right Cheek/High Channel/Zoom Scan**(5x5x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.273 V/m; Power Drift = -0.18 dB

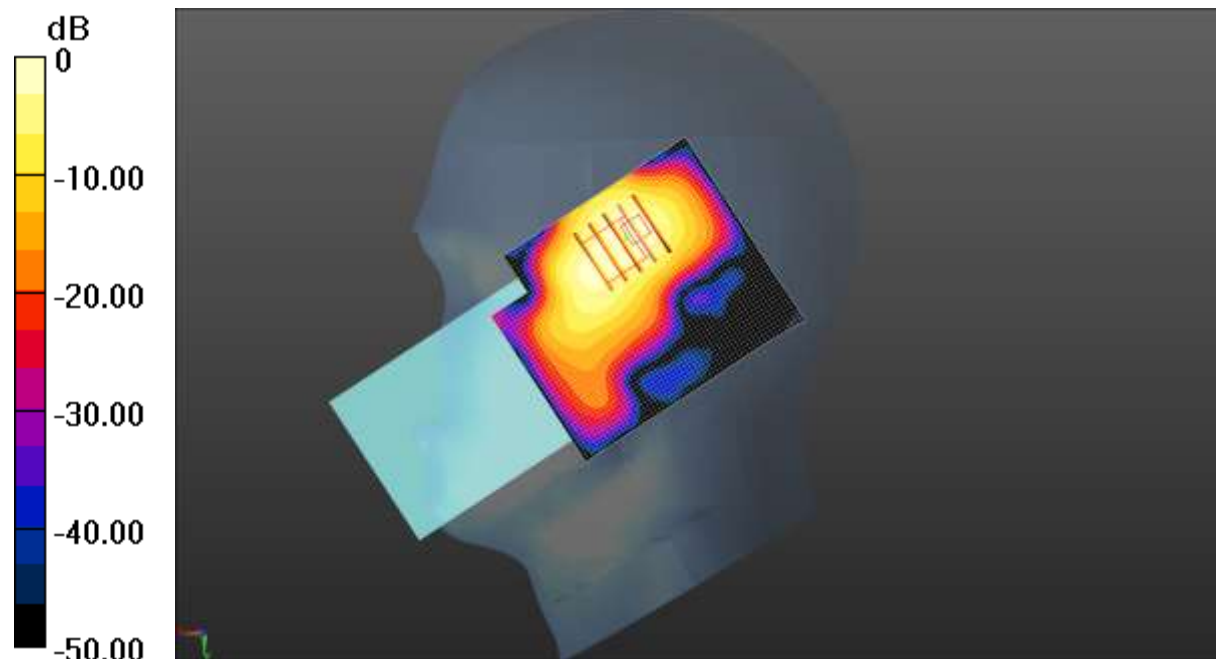
Peak SAR (extrapolated) = 0.336 W/kg

SAR(1 g) = 0.145 W/kg; SAR(10 g) = 0.075 W/kg

Maximum value of SAR (measured) = 0.249 W/kg

LTE Band 7 50%RB(20MHz) Right Cheek/High Channel/Area Scan**(51x61x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.388 W/kg



0 dB = 0.388 W/kg = -4.11 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.10.2021 14:31:58

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-FDD (USA) 10MHz 50%RB QPSK (0); Frequency: 844 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 844 \text{ MHz}$; $\sigma = 0.931 \text{ S/m}$; $\epsilon_r = 40.42$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(9.71, 9.71, 9.71); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 5 50%RB(10MHz) Right Cheek/High Channel/Area Scan

(51x61x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

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

LTE Band 5 50%RB(10MHz) Right Cheek/High Channel/Zoom Scan

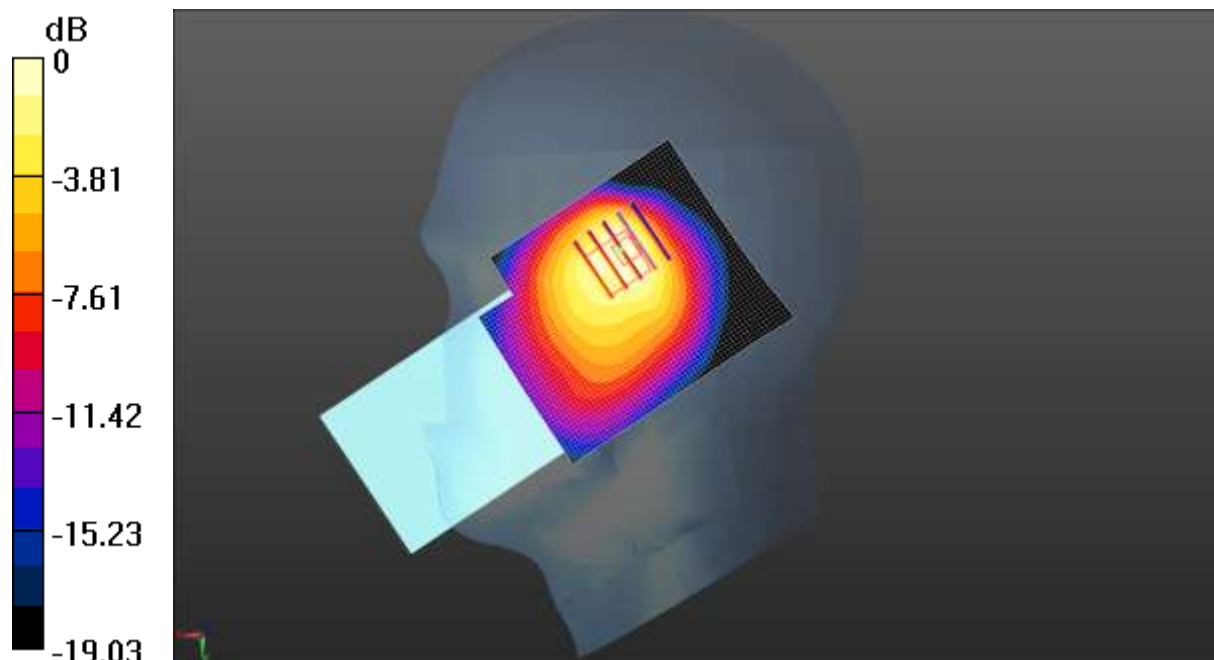
(5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 12.17 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.384 W/kg

SAR(1 g) = 0.177 W/kg; SAR(10 g) = 0.109 W/kg

Maximum value of SAR (measured) = 0.282 W/kg



0 dB = 0.282 W/kg = -5.50 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.22.2021 17:18:36

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-TDD(USA) 20MHz 50%RB QPSK (0); Frequency: 2610 MHz; Duty Cycle: 1:1.59956

Medium parameters used: $f = 2610 \text{ MHz}$; $\sigma = 2.032 \text{ S/m}$; $\epsilon_r = 38.114$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.35, 7.35, 7.35); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 38 50%RB(20MHz) Right Cheek/High Channel/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.530 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.124 W/kg

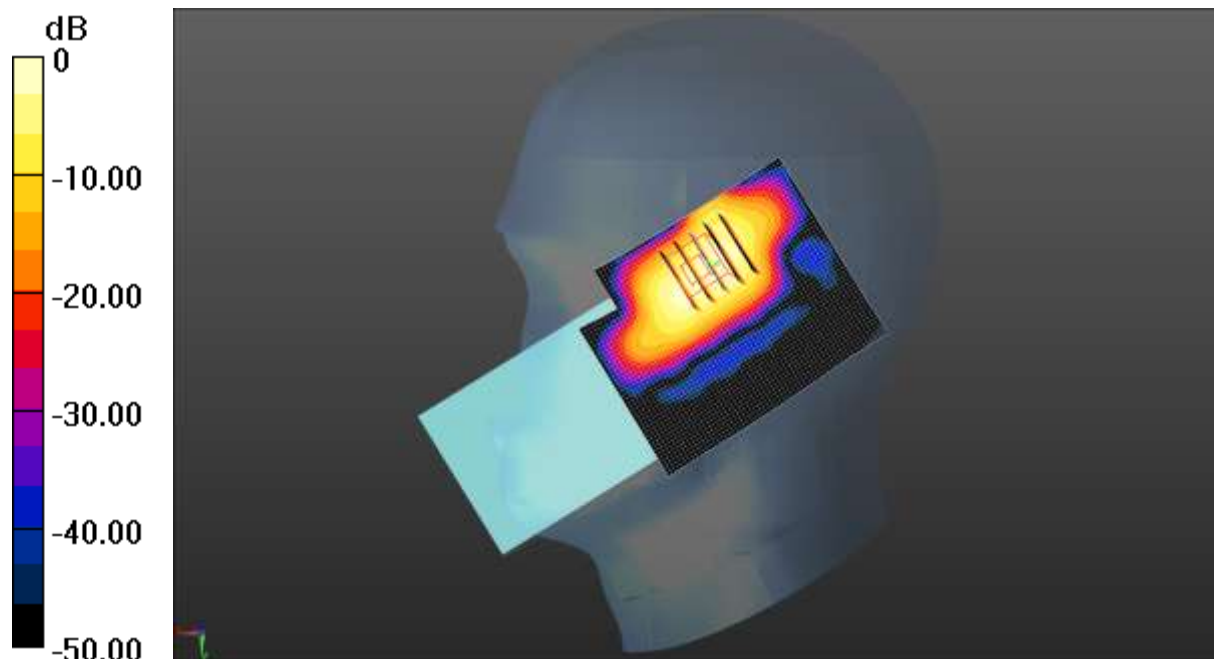
SAR(1 g) = 0.062 W/kg; SAR(10 g) = 0.031 W/kg

Maximum value of SAR (measured) = 0.0985 W/kg

LTE Band 38 50%RB(20MHz) Right Cheek/High Channel/Area Scan

(51x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.221 W/kg



0 dB = 0.221 W/kg = -6.56 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.22.2021 20:10:55

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-TDD(USA) 20MHz 50%RB QPSK (0); Frequency: 2645 MHz; Duty Cycle: 1:1.59956

Medium parameters used (interpolated): $f = 2645$ MHz; $\sigma = 2.078$ S/m; $\epsilon_r = 37.956$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.35, 7.35, 7.35); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 41 50%RB(20MHz) Right Cheek/High Channel/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.419 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 0.149 W/kg

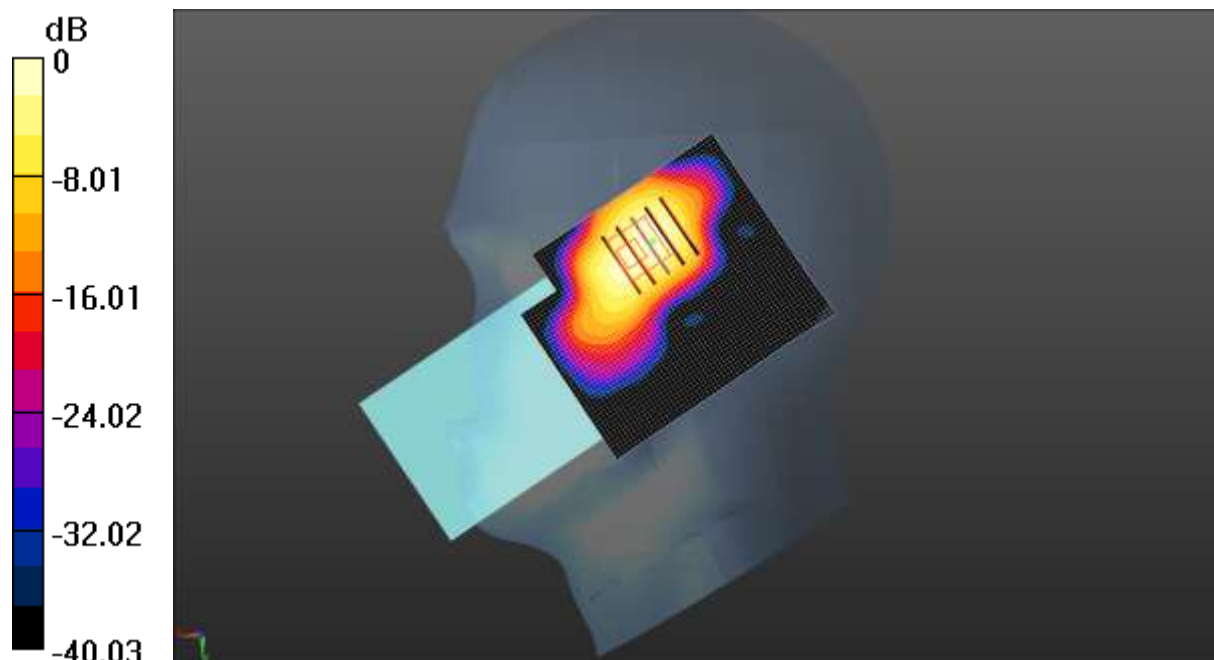
SAR(1 g) = 0.070 W/kg; SAR(10 g) = 0.033 W/kg

Maximum value of SAR (measured) = 0.114 W/kg

LTE Band 41 50%RB(20MHz) Right Cheek/High Channel/Area Scan

(51x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.210 W/kg



0 dB = 0.210 W/kg = -6.78 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.22.2021 09:45:22

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps) (0);
 Frequency: 2412 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 2412 \text{ MHz}$; $\sigma = 1.832 \text{ S/m}$; $\epsilon_r = 38.864$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Left Section

DASY5 Configuration:

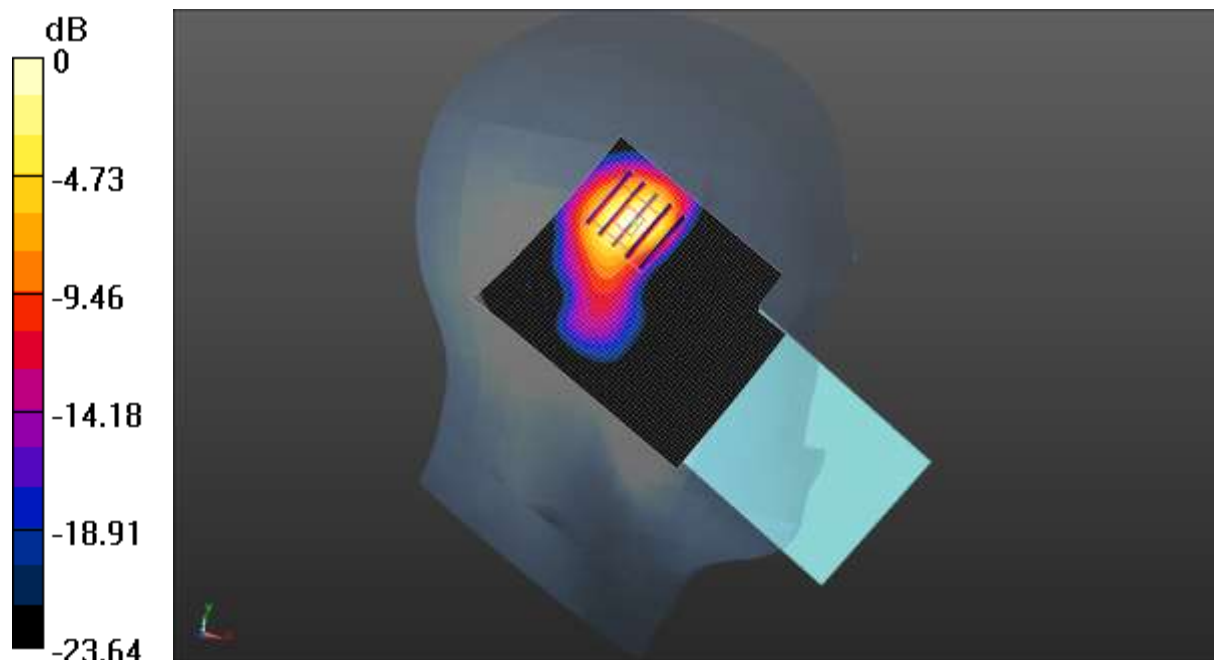
- Probe: EX3DV4 - SN3924; ConvF(7.58, 7.58, 7.58); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2.4G WIFI Left Tilted/Low Channel/Zoom Scan (5x5x7)/Cube 0: Measurement

grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 4.682 V/m; Power Drift = -0.11 dB
 Peak SAR (extrapolated) = 0.961 W/kg
SAR(1 g) = 0.395 W/kg; SAR(10 g) = 0.156 W/kg
 Maximum value of SAR (measured) = 0.712 W/kg

2.4G WIFI Left Tilted/Low Channel/Area Scan (51x61x1): Interpolated grid:

$dx=1.200 \text{ mm}$, $dy=1.200 \text{ mm}$
 Maximum value of SAR (interpolated) = 0.522 W/kg



0 dB = 0.522 W/kg = -2.82 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.18.2021 23:17:31

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, IEEE 802.11a WiFi 5GHz (0); Frequency: 5240 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5240$ MHz; $\sigma = 4.588$ S/m; $\epsilon_r = 35.985$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(5.42, 5.42, 5.42); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5.2G WIFI Left Tilted/High Channel/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 5.373 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.646 W/kg

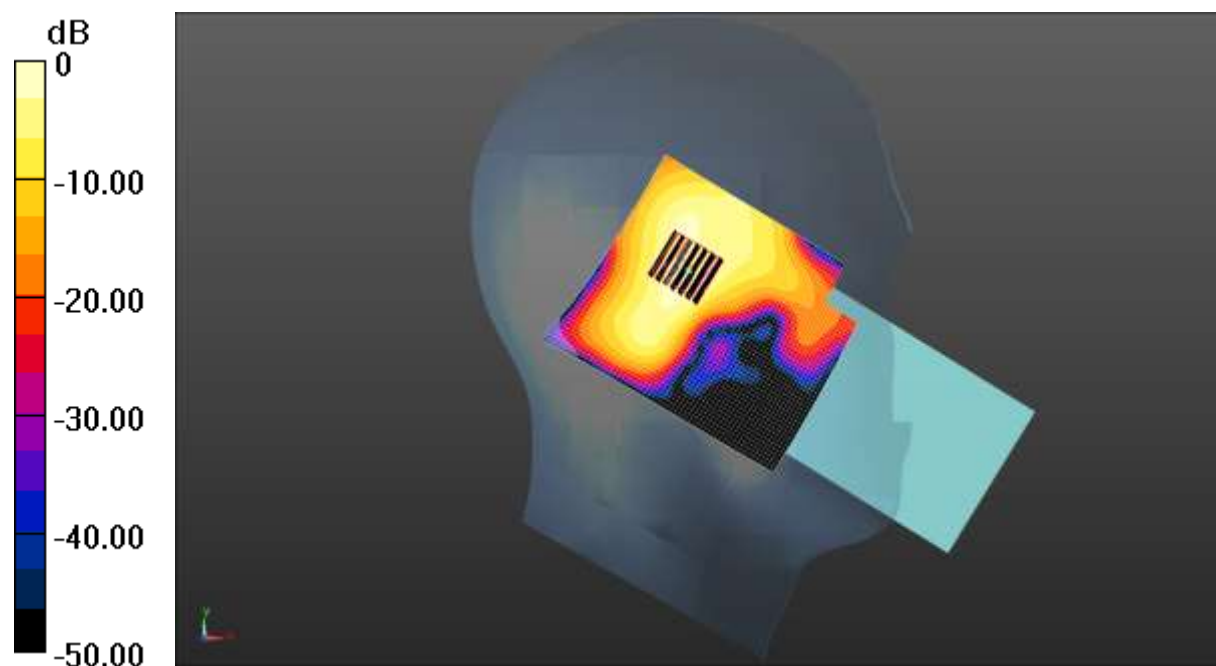
SAR(1 g) = 0.159 W/kg; SAR(10 g) = 0.044 W/kg

Maximum value of SAR (measured) = 0.554 W/kg

5.2G WIFI Left Tilted/High Channel/Area Scan (51x61x1): Interpolated grid:

dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.266 W/kg



Test Laboratory: JYTSZ

Date/Time: 01.19.2021 04:15:53

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, IEEE 802.11n20 WiFi 5GHz (0); Frequency: 5825 MHz;

Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 5825$ MHz; $\sigma = 5.265$ S/m; $\epsilon_r = 34.074$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(4.96, 4.96, 4.96); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5.8G WIFI Left Cheek/High Channel/Area Scan (51x61x1): Interpolated grid:

dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.447 W/kg

5.8G WIFI Left Cheek/High Channel/Zoom Scan (7x7x7)/Cube 0: Measurement

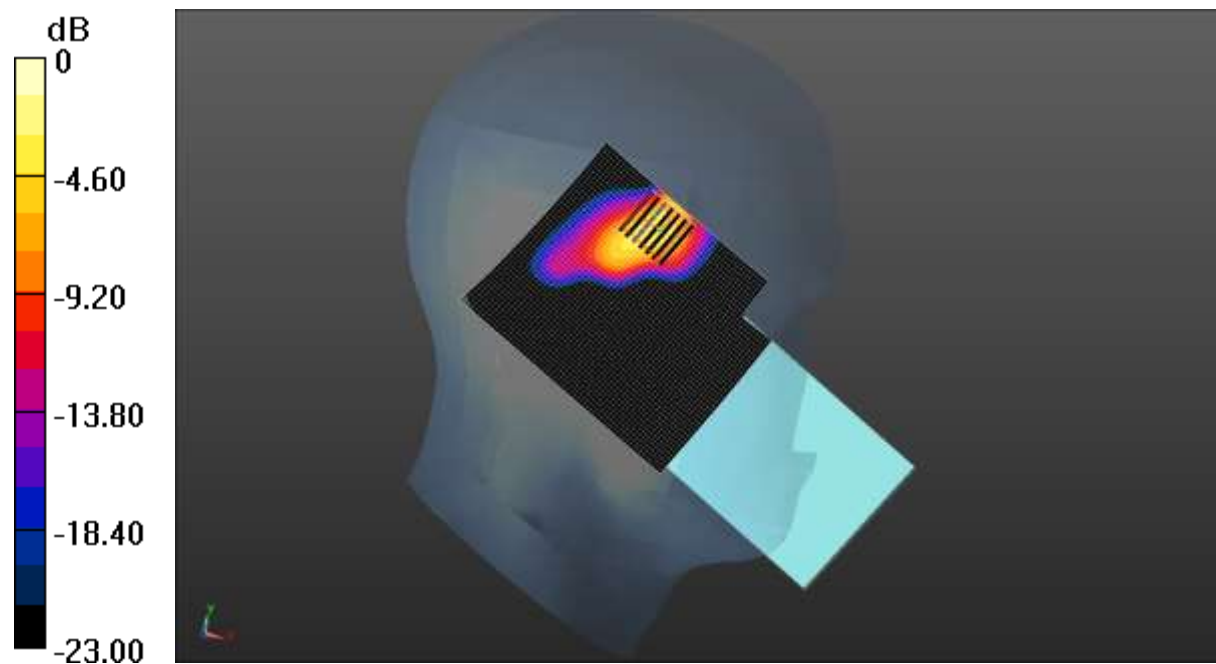
grid: dx=4mm, dy=4mm, dz=2mm

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

Peak SAR (extrapolated) = 1.35 W/kg

SAR(1 g) = 0.294 W/kg; SAR(10 g) = 0.070 W/kg

Maximum value of SAR (measured) = 0.940 W/kg



0 dB = 0.940 W/kg = -0.27 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.10.2021 10:19:54

DUT: Mobile Phone; Type: X659B; Serial: 4#

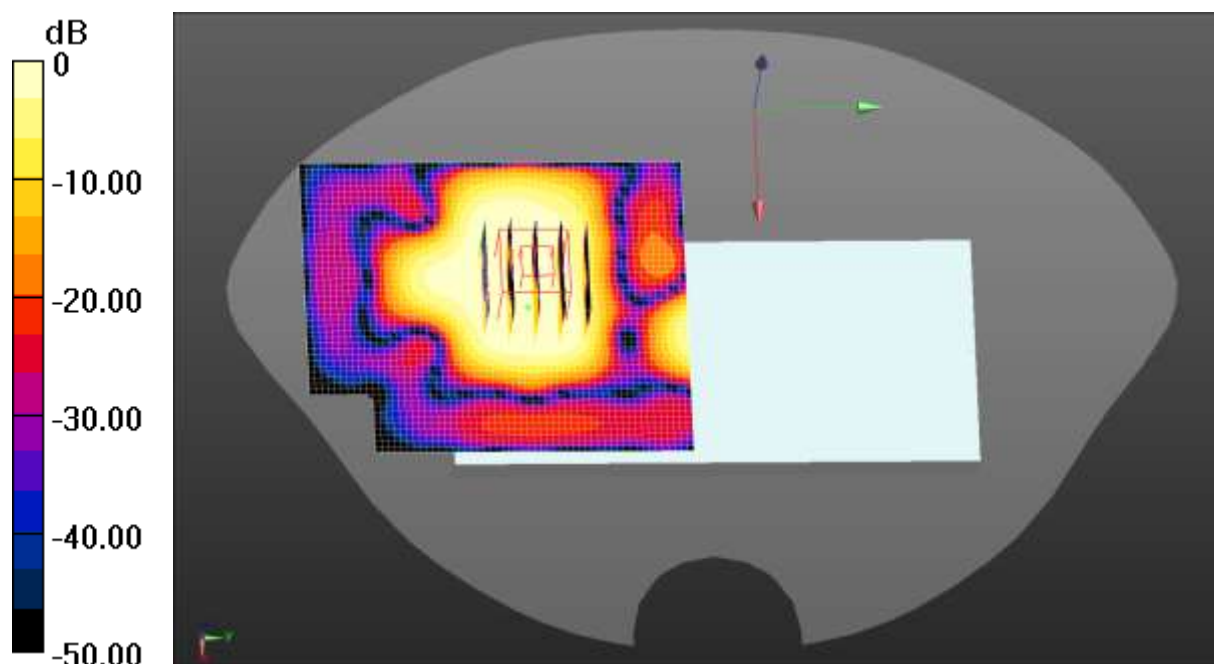
Communication System: UID 0, GSM (0); Frequency: 836.6 MHz; Duty Cycle: 1:8.30042
 Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.924$ S/m; $\epsilon_r = 41.527$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(9.71, 9.71, 9.71); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

GSM 850 Body Back/Middle Channel/Area Scan (51x61x1): Interpolated grid:
 $dx=1.500$ mm, $dy=1.500$ mm
 Maximum value of SAR (interpolated) = 0.00170 W/kg

GSM 850 Body Back/Middle Channel/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm
 Reference Value = 0.4890 V/m; Power Drift = 0.16 dB
 Peak SAR (extrapolated) = 0.00265 W/kg
SAR(1 g) = 0.002784 W/kg; SAR(10 g) = 0.000589 W/kg
 Maximum value of SAR (measured) = 0.00151 W/kg



0 dB = 0.00151 W/kg = -28.21 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.13.2021 09:41:12

DUT: Mobile Phone; Type: X659B; Serial: 4#

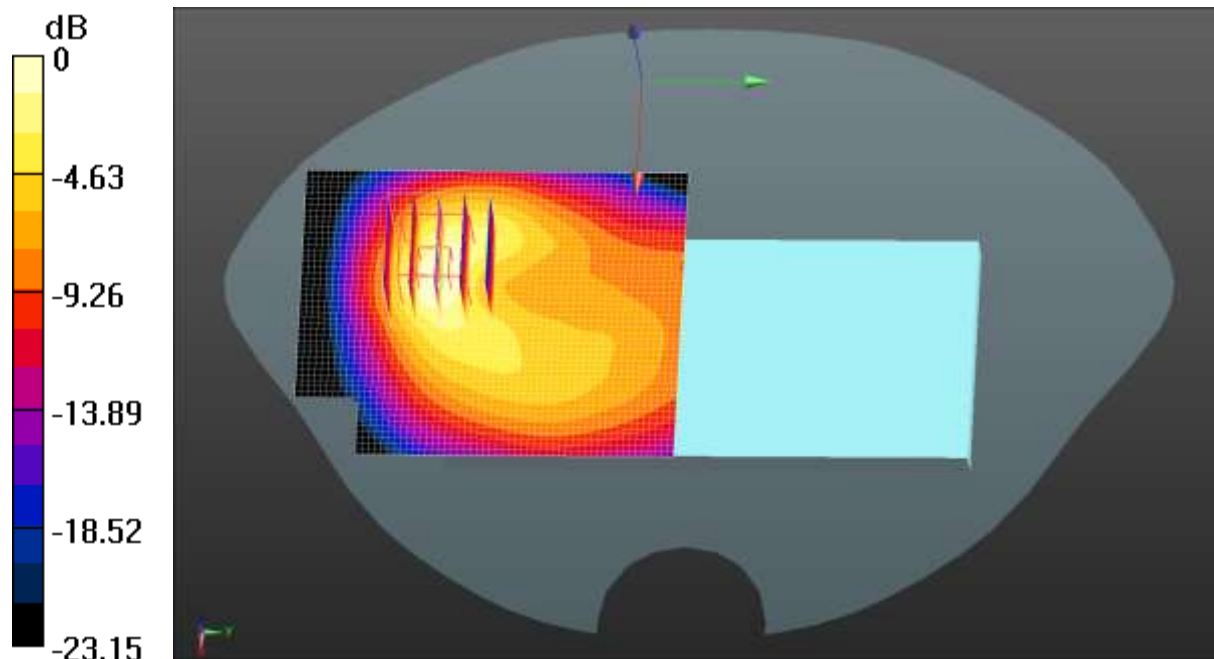
Communication System: UID 0, GSM (0); Frequency: 1880 MHz; Duty Cycle: 1:8.30042
 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.432$ S/m; $\epsilon_r = 39.029$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

GSM 1900 Body Back/Middle Channel/Area Scan (51x61x1): Interpolated grid:
 $dx=1.500$ mm, $dy=1.500$ mm
 Maximum value of SAR (interpolated) = 0.139 W/kg

GSM 1900 Body Back/Middle Channel/Zoom Scan (5x5x7)/Cube 0:
 Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm
 Reference Value = 3.607 V/m; Power Drift = 0.14 dB
 Peak SAR (extrapolated) = 0.168 W/kg
SAR(1 g) = 0.090 W/kg; SAR(10 g) = 0.046 W/kg
 Maximum value of SAR (measured) = 0.135 W/kg



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

Test Laboratory: JYTSZ

Date/Time: 01.10.2021 12:33:33

DUT: Mobile Phone; Type: X659B; Serial: 4#

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

Medium parameters used (interpolated): $f = 826.4$ MHz; $\sigma = 0.917$ S/m; $\epsilon_r = 41.635$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(9.71, 9.71, 9.71); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA 850 Body Back/Low Channel/Area Scan (51x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.00872 W/kg

WCDMA 850 Body Back/Low Channel/Zoom Scan (5x5x7)/Cube 0:

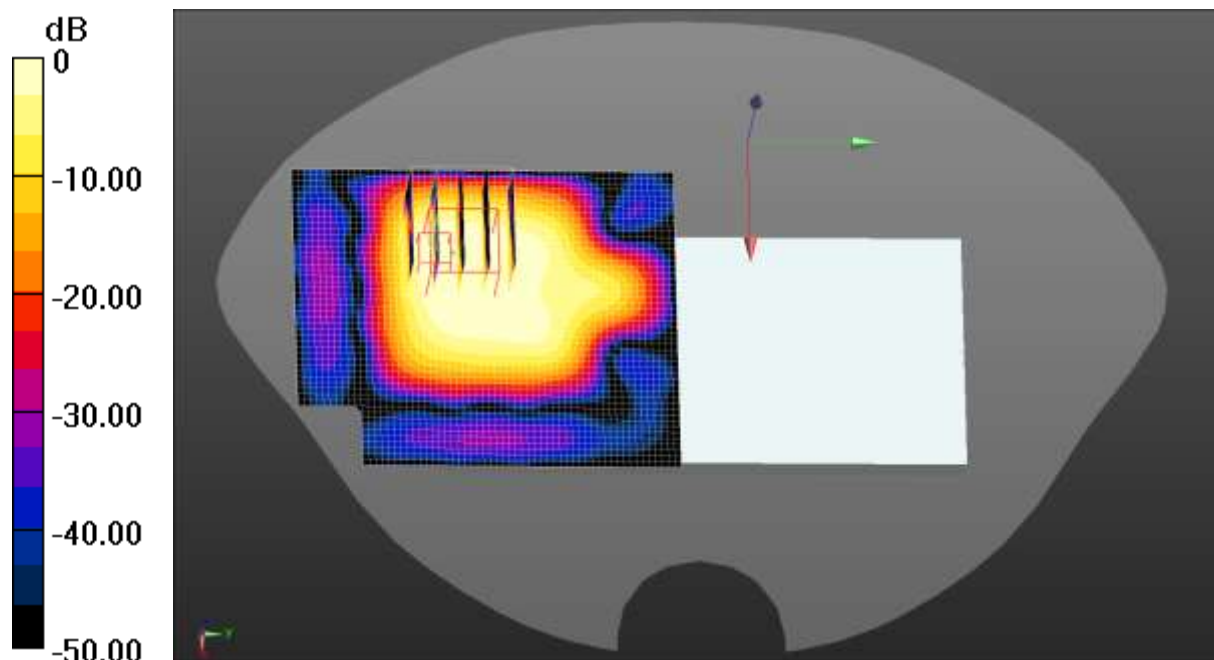
Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.8400 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.00695 W/kg

SAR(1 g) = 0.00173 W/kg; SAR(10 g) = 0.000663 W/kg

Maximum value of SAR (measured) = 0.00443 W/kg



0 dB = 0.00443 W/kg = -23.54 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.13.2021 12:15:16

DUT: Mobile Phone; Type: X659B; Serial: 4#

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

Medium parameters used (interpolated): $f = 1907.6 \text{ MHz}$; $\sigma = 1.436 \text{ S/m}$; $\epsilon_r = 38.872$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA 1900 Body Back/High Channel/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 4.215 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.155 W/kg

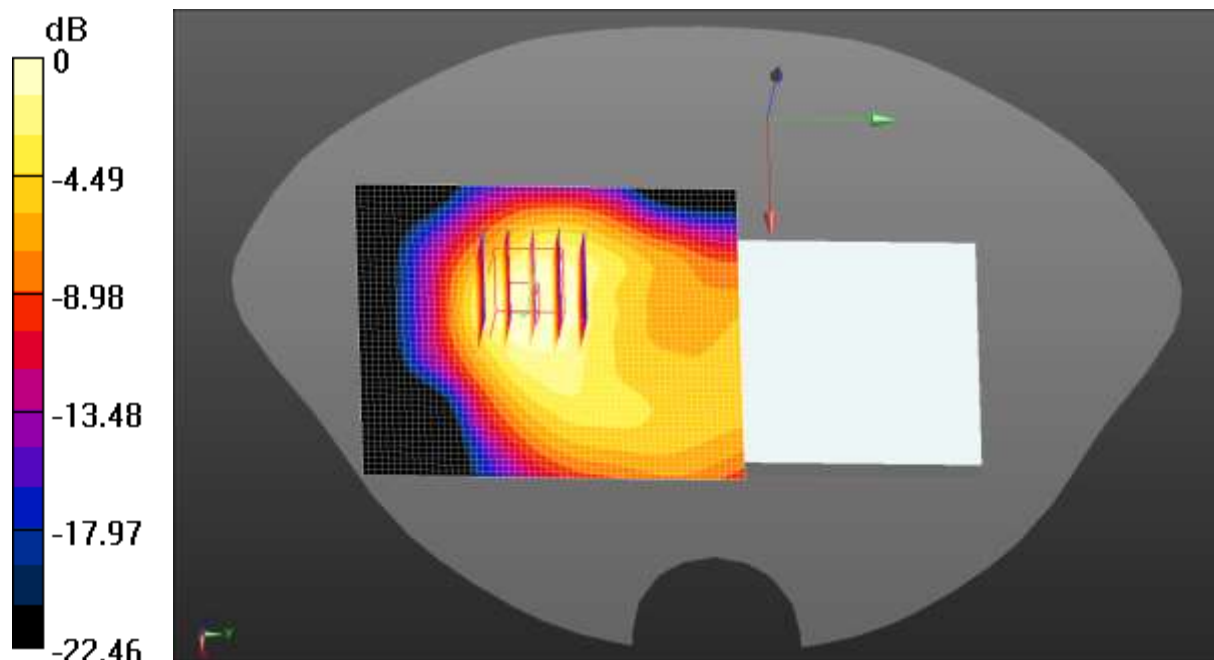
SAR(1 g) = 0.081 W/kg; SAR(10 g) = 0.041 W/kg

Maximum value of SAR (measured) = 0.127 W/kg

WCDMA 1900 Body Back/High Channel/Area Scan (51x61x1): Interpolated grid:

$dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.0877 W/kg



0 dB = 0.0877 W/kg = -10.57 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.13.2021 16:08:38

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 1880 MHz;
Duty Cycle: 1:1

Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.432 \text{ S/m}$; $\epsilon_r = 39.029$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 2 1RB(20MHz) Body Back/Middle Channel/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 4.017 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 0.122 W/kg

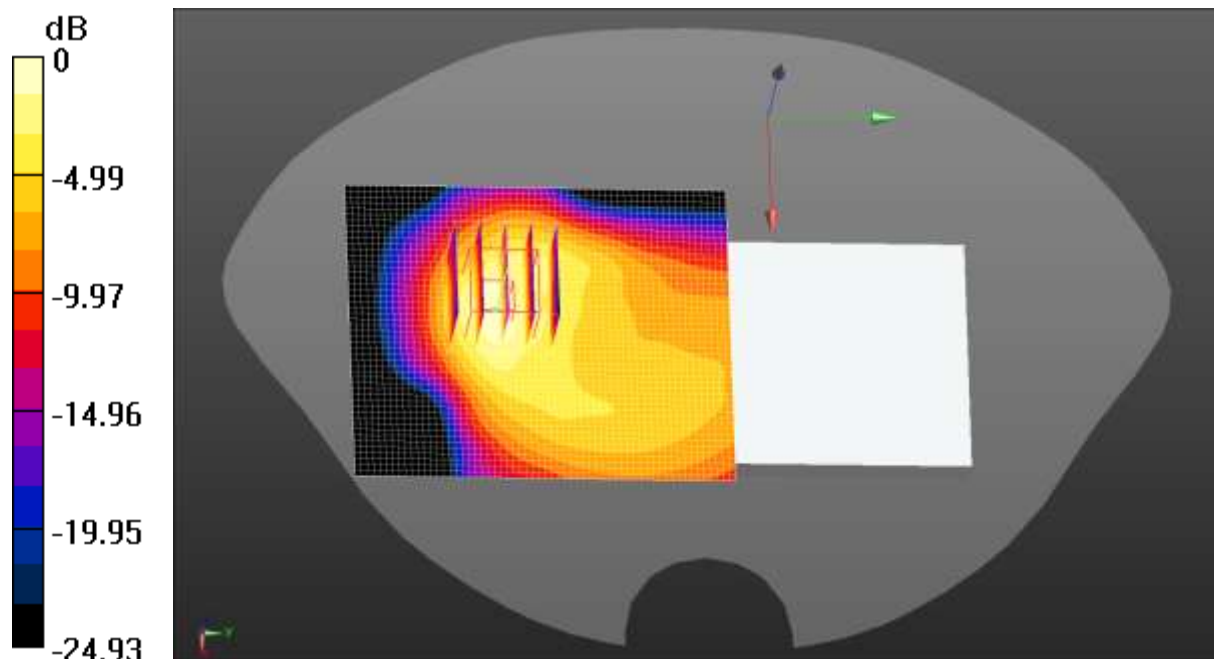
SAR(1 g) = 0.064 W/kg; SAR(10 g) = 0.033 W/kg

Maximum value of SAR (measured) = 0.102 W/kg

LTE Band 2 1RB(20MHz) Body Back/Middle Channel/Area Scan (51x61x1):

Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.0909 W/kg



0 dB = 0.0909 W/kg = -10.41 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.13.2021 17:21:14

DUT: Mobile Phone; Type: X659B; Serial: 4#Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 1732.5 MHz;
Duty Cycle: 1:1Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.317$ S/m; $\epsilon_r = 39.749$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.43, 8.43, 8.43); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 4 1RB(20MHz) Body Back/Middle Channel/Area Scan (51x61x1):

Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.118 W/kg

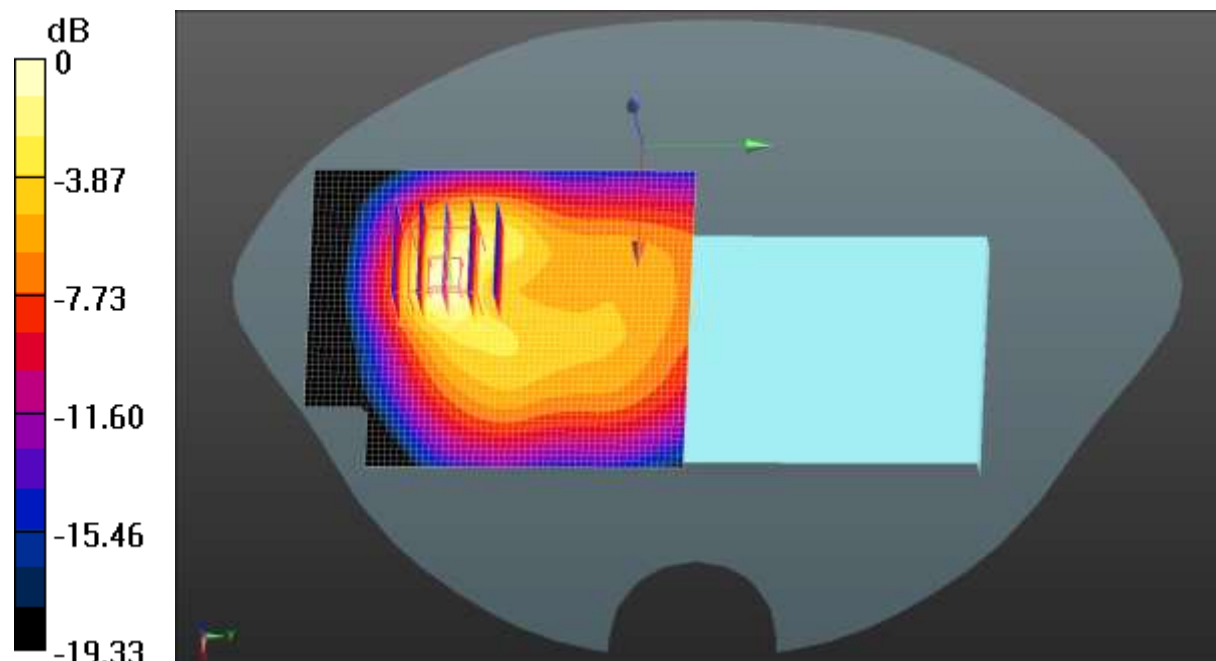
LTE Band 4 1RB(20MHz) Body Back/Middle Channel/Zoom Scan**(5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.527 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 0.145 W/kg

SAR(1 g) = 0.079 W/kg; SAR(10 g) = 0.041 W/kg

Maximum value of SAR (measured) = 0.121 W/kg



0 dB = 0.121 W/kg = -9.17 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.22.2021 14:37:56

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 2560 MHz;
Duty Cycle: 1:1

Medium parameters used: $f = 2560 \text{ MHz}$; $\sigma = 1.965 \text{ S/m}$; $\epsilon_r = 38.436$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

DASY5 Configuration:

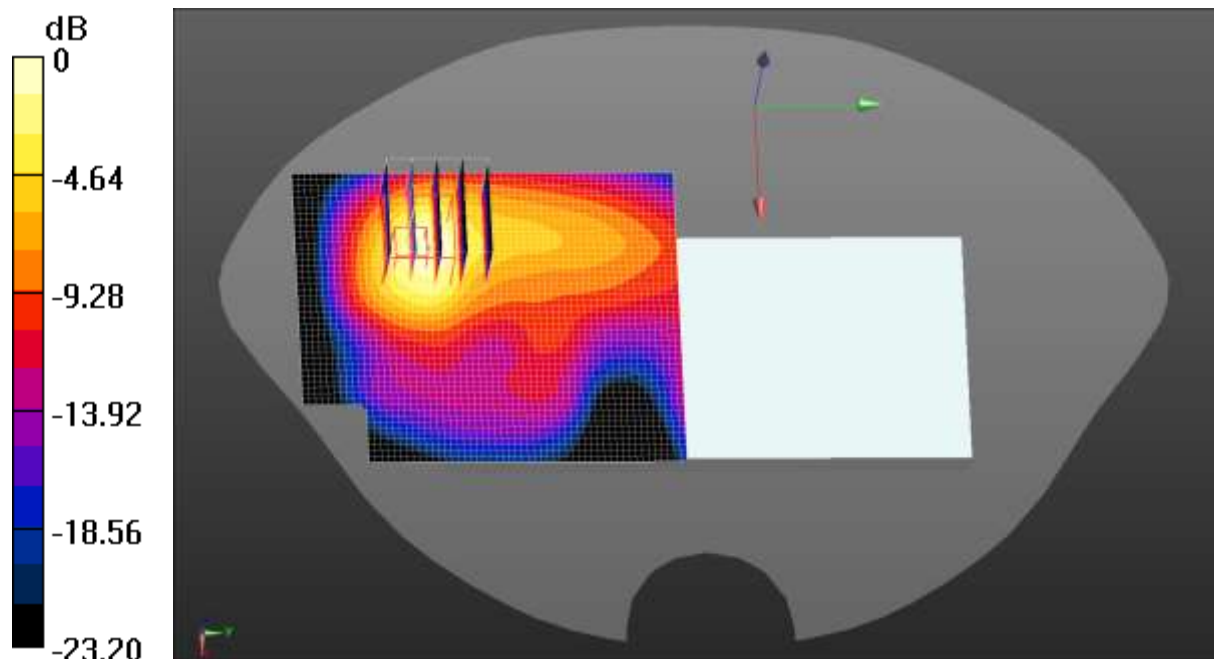
- Probe: EX3DV4 - SN3924; ConvF(7.35, 7.35, 7.35); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 7 1RB(20MHz) Body Back/High Channel/Area Scan (51x61x1):

Interpolated grid: $dx=1.200 \text{ mm}$, $dy=1.200 \text{ mm}$
Maximum value of SAR (interpolated) = 0.307 W/kg

LTE Band 7 1RB(20MHz) Body Back/High Channel/Zoom Scan (5x5x7)/Cube

0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 3.390 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.409 W/kg
SAR(1 g) = 0.177 W/kg; SAR(10 g) = 0.076 W/kg
Maximum value of SAR (measured) = 0.309 W/kg



0 dB = 0.309 W/kg = -5.10 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.10.2021 16:04:39

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 844 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 844 \text{ MHz}$; $\sigma = 0.931 \text{ S/m}$; $\epsilon_r = 40.42$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(9.71, 9.71, 9.71); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 5 1RB(10MHz) Body Back/High Channel/Area Scan (51x61x1):

Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.194 W/kg

LTE Band 5 1RB(10MHz) Body Back/High Channel/Zoom Scan (5x5x7)/Cube

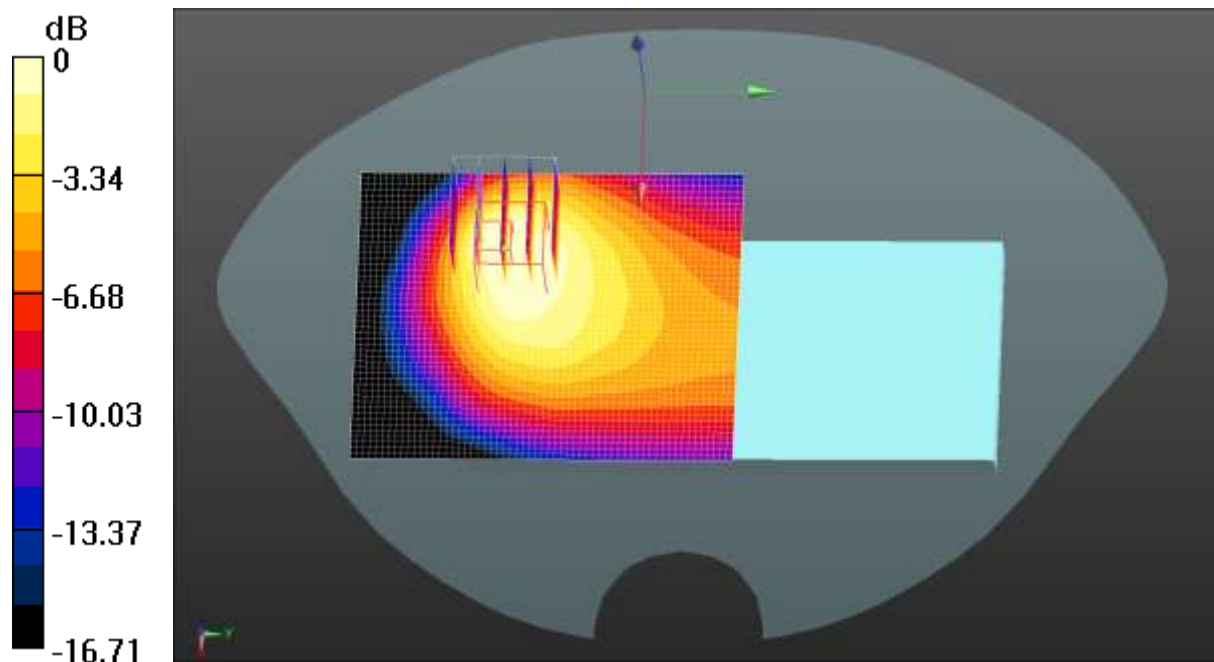
0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.524 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.203 W/kg

SAR(1 g) = 0.101 W/kg; SAR(10 g) = 0.062 W/kg

Maximum value of SAR (measured) = 0.154 W/kg



0 dB = 0.154 W/kg = -8.12 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.22.2021 15:18:49

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-TDD(USA) 20MHz 1RB QPSK (0); Frequency: 2610 MHz; Duty Cycle: 1:1.59956

Medium parameters used: $f = 2610$ MHz; $\sigma = 2.032$ S/m; $\epsilon_r = 38.114$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.35, 7.35, 7.35); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 38 1RB(20MHz) Body Back/High Channel/Area Scan (51x61x1):

Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.159 W/kg

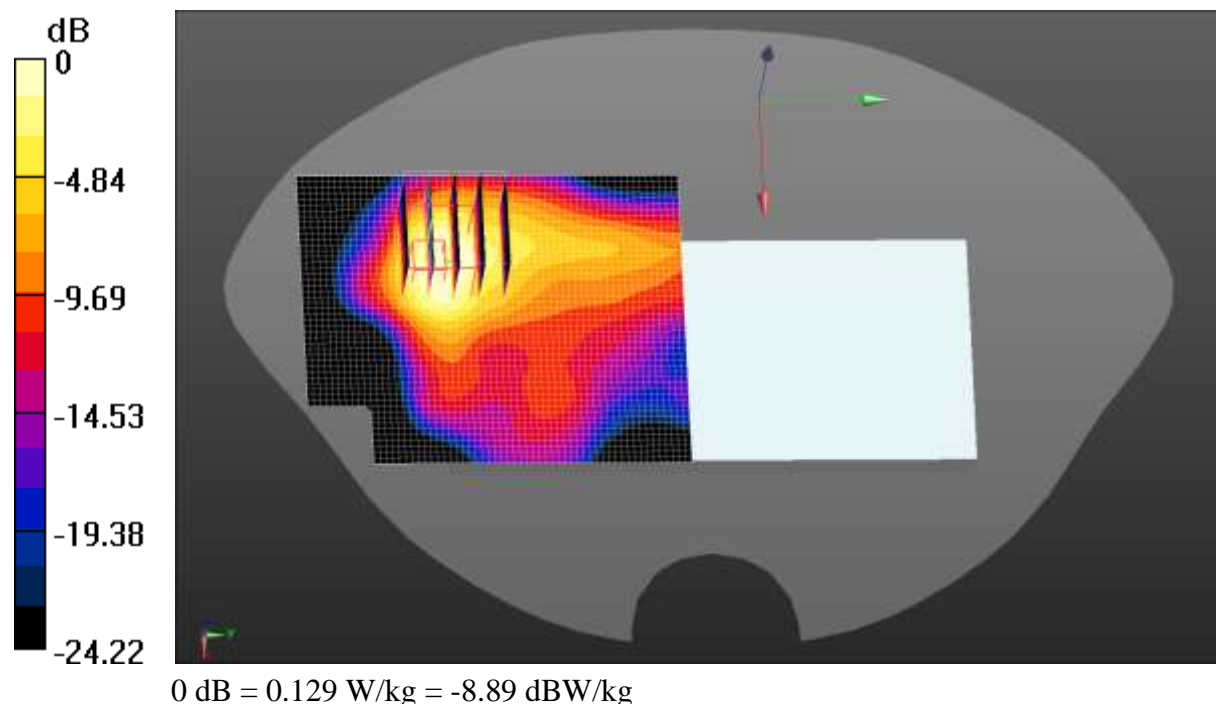
LTE Band 38 1RB(20MHz) Body Back/High Channel/Zoom Scan**(5x5x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.323 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.169 W/kg

SAR(1 g) = 0.069 W/kg; SAR(10 g) = 0.030 W/kg

Maximum value of SAR (measured) = 0.129 W/kg



Test Laboratory: JYTSZ

Date/Time: 01.22.2021 22:28:35

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-TDD(USA) 20MHz 1RB QPSK (0); Frequency: 2645 MHz; Duty Cycle: 1:1.59956

Medium parameters used (interpolated): $f = 2645$ MHz; $\sigma = 2.078$ S/m; $\epsilon_r = 37.956$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.35, 7.35, 7.35); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 41 1RB(20MHz) Body Back/High Channel/Area Scan (51x61x1):

Interpolated grid: dx=1.200 mm, dy=1.200 mm

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

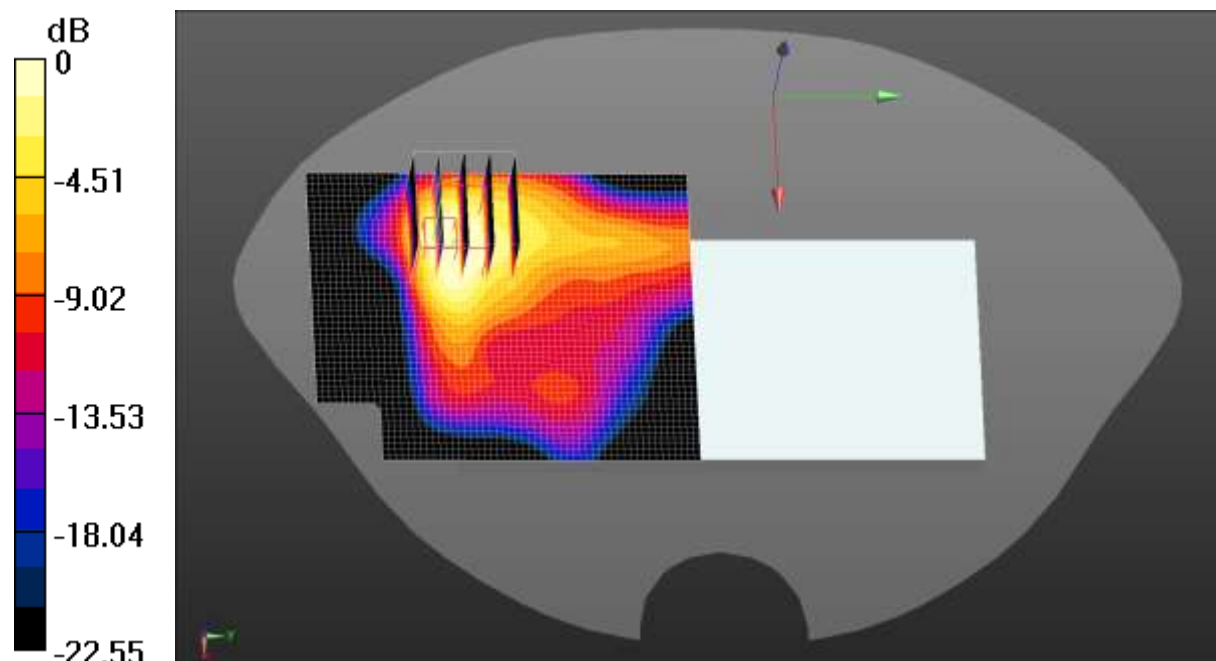
LTE Band 41 1RB(20MHz) Body Back/High Channel/Zoom Scan**(5x5x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 0.6550 V/m; Power Drift = 0.23 dB

Peak SAR (extrapolated) = 0.163 W/kg

SAR(1 g) = 0.065 W/kg; SAR(10 g) = 0.028 W/kg

Maximum value of SAR (measured) = 0.121 W/kg



Test Laboratory: JYTSZ

Date/Time: 01.13.2021 15:23:56

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-FDD(USA) 20MHz 50%RB QPSK (0); Frequency: 1880 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.432 \text{ S/m}$; $\epsilon_r = 39.029$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 2 50%RB(20MHz) Body Back/Middle Channel/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 3.797 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.111 W/kg

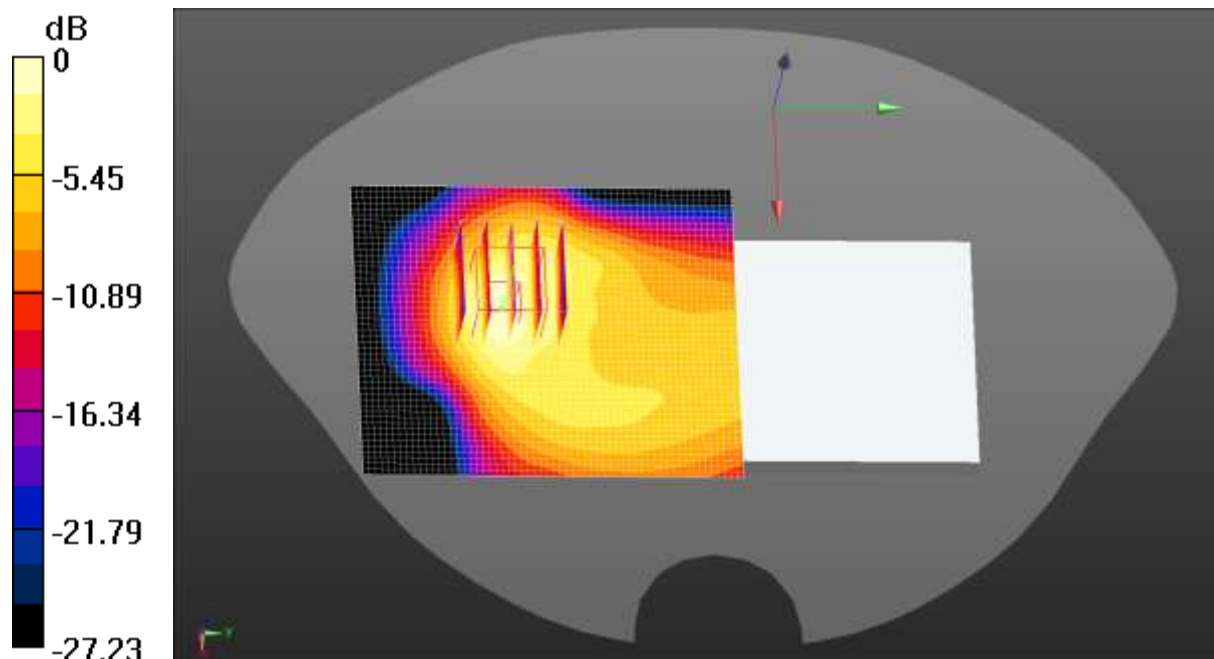
SAR(1 g) = 0.058 W/kg; SAR(10 g) = 0.029 W/kg

Maximum value of SAR (measured) = 0.0925 W/kg

LTE Band 2 50%RB(20MHz) Body Back/Middle Channel/Area Scan

(51x61x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.0801 W/kg



0 dB = 0.0801 W/kg = -10.96 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.13.2021 18:42:52

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-FDD(USA) 20MHz 50%RB QPSK (0); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 1732.5 \text{ MHz}$; $\sigma = 1.317 \text{ S/m}$; $\epsilon_r = 39.749$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.43, 8.43, 8.43); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 4 50%RB(20MHz) Body Back/Middle Channel/Area Scan

(51x61x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.0824 W/kg

LTE Band 4 50%RB(20MHz) Body Back/Middle Channel/Zoom Scan

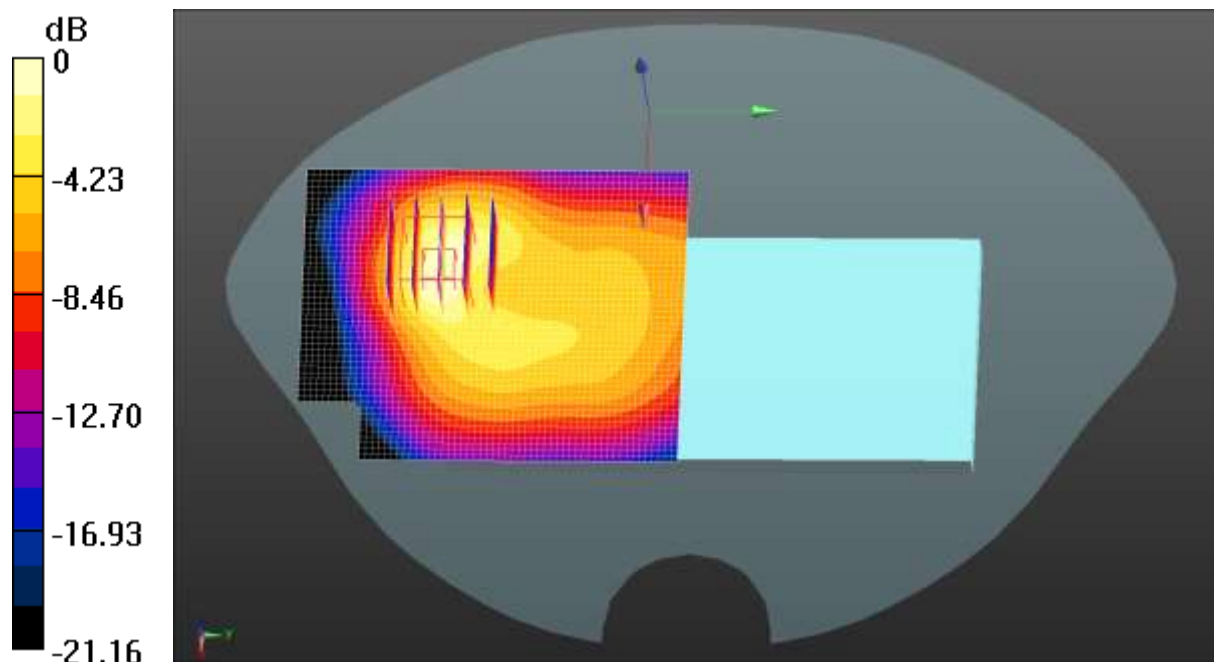
(5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 2.952 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.101 W/kg

SAR(1 g) = 0.055 W/kg; SAR(10 g) = 0.029 W/kg

Maximum value of SAR (measured) = 0.0838 W/kg



0 dB = 0.0838 W/kg = -10.77 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.22.2021 13:33:21

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-FDD(USA) 20MHz 50%RB QPSK (0); Frequency: 2560 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2560 \text{ MHz}$; $\sigma = 1.965 \text{ S/m}$; $\epsilon_r = 38.436$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

DASY5 Configuration:

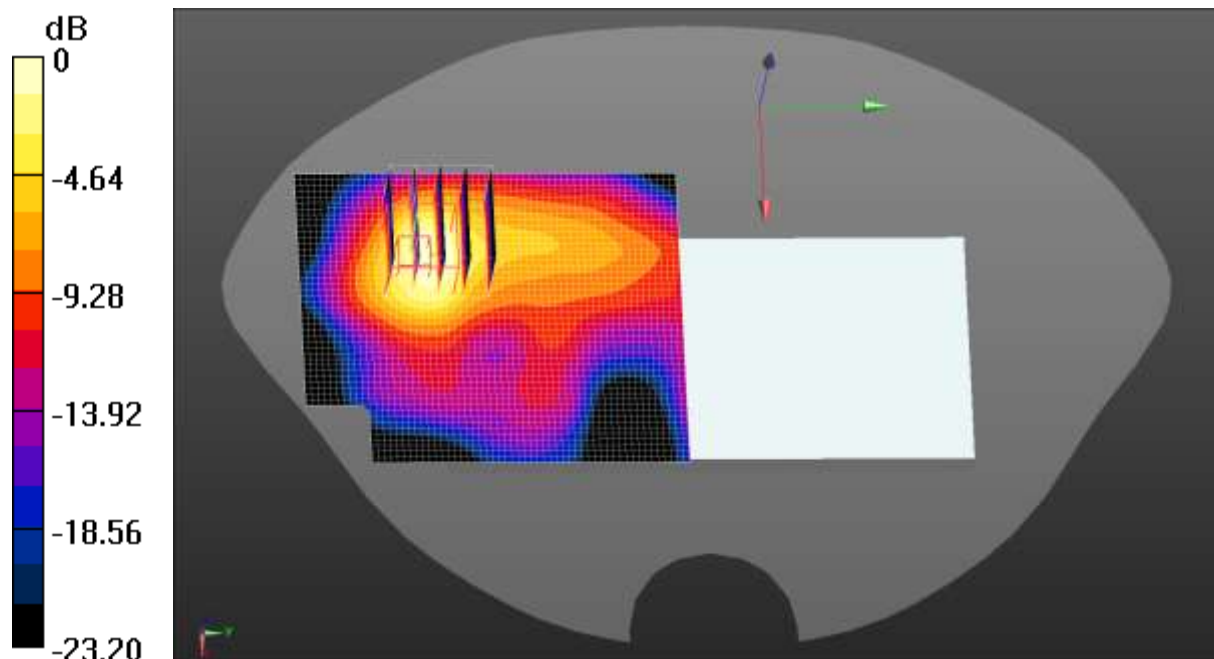
- Probe: EX3DV4 - SN3924; ConvF(7.35, 7.35, 7.35); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 7 50%RB(20MHz) Body Back/High Channel/Area Scan (51x61x1):

Interpolated grid: $dx=1.200 \text{ mm}$, $dy=1.200 \text{ mm}$
Maximum value of SAR (interpolated) = 0.233 W/kg

LTE Band 7 50%RB(20MHz) Body Back/High Channel/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 2.708 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.322 W/kg
SAR(1 g) = 0.140 W/kg; SAR(10 g) = 0.060 W/kg
Maximum value of SAR (measured) = 0.238 W/kg



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

Test Laboratory: JYTSZ

Date/Time: 01.10.2021 15:19:09

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-FDD (USA) 10MHz 50%RB QPSK (0); Frequency: 844 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 844 \text{ MHz}$; $\sigma = 0.931 \text{ S/m}$; $\epsilon_r = 40.42$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(9.71, 9.71, 9.71); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 5 50%RB(10MHz) Body Back/High Channel/Area Scan (51x61x1):

Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.171 W/kg

LTE Band 5 50%RB(10MHz) Body Back/High Channel/Zoom Scan

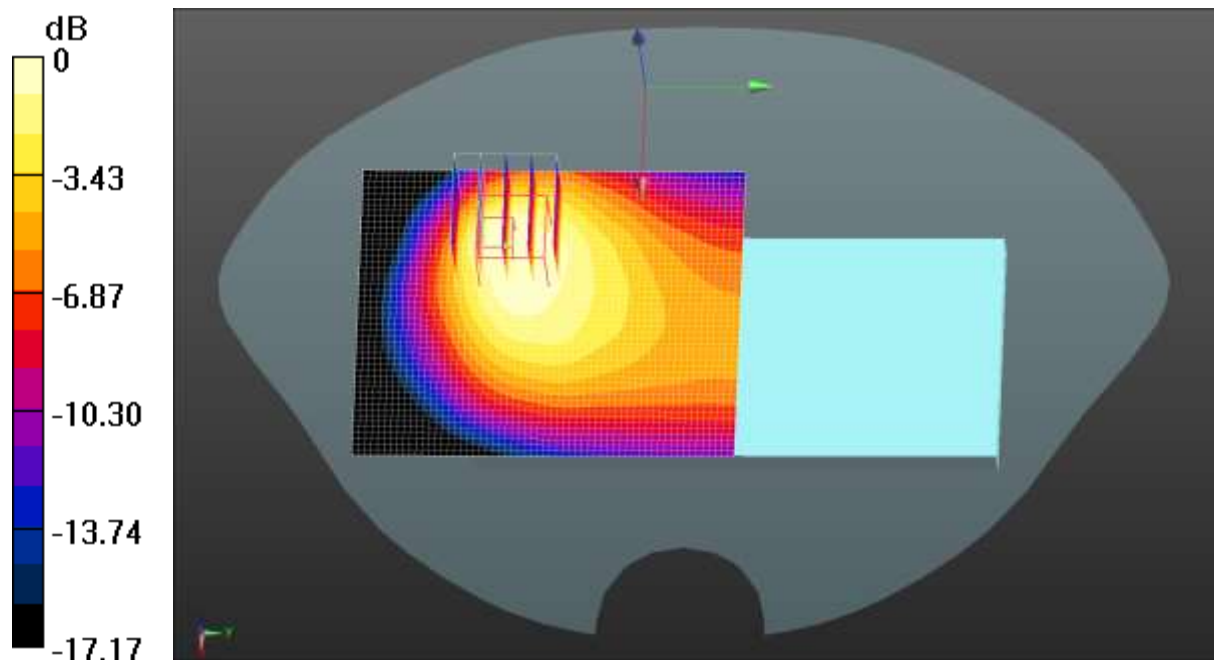
(5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 6.996 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.179 W/kg

SAR(1 g) = 0.088 W/kg; SAR(10 g) = 0.054 W/kg

Maximum value of SAR (measured) = 0.136 W/kg



0 dB = 0.136 W/kg = -8.66 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.22.2021 16:13:30

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-TDD(USA) 20MHz 50%RB QPSK (0); Frequency: 2610 MHz; Duty Cycle: 1:1.59956

Medium parameters used: $f = 2610 \text{ MHz}$; $\sigma = 2.032 \text{ S/m}$; $\epsilon_r = 38.114$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

DASY5 Configuration:

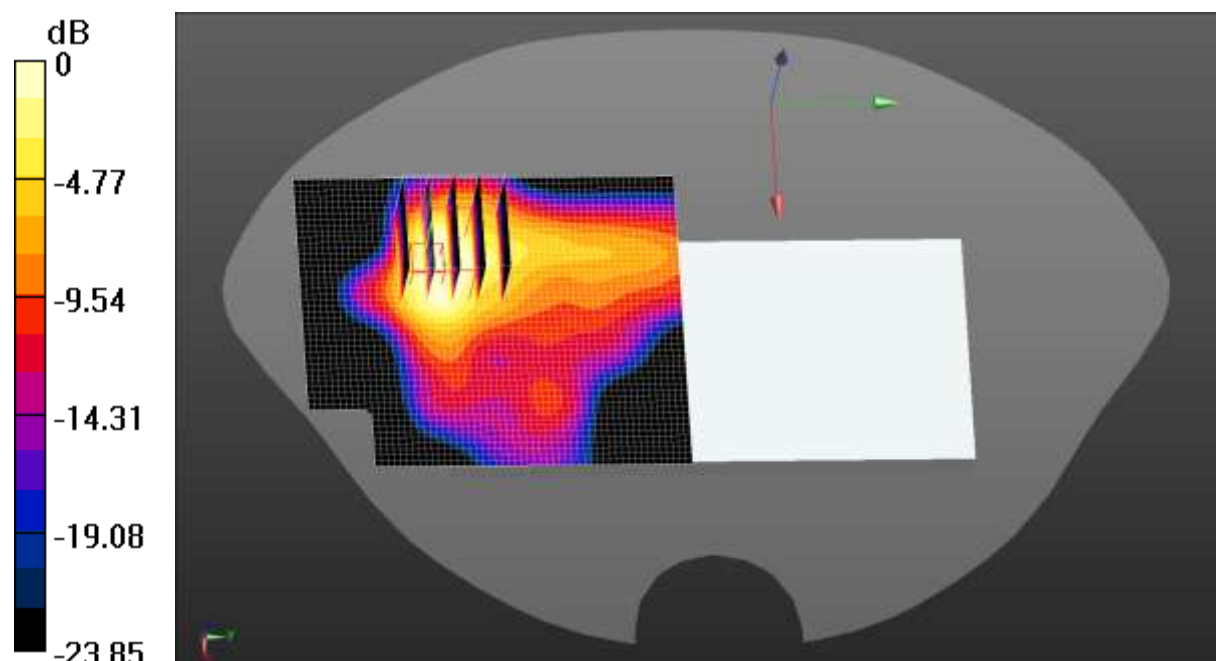
- Probe: EX3DV4 - SN3924; ConvF(7.35, 7.35, 7.35); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 38 50%RB(20MHz) Body Back/High Channel/Area Scan (51x61x1):

Interpolated grid: $dx=1.200 \text{ mm}$, $dy=1.200 \text{ mm}$
Maximum value of SAR (interpolated) = 0.131 W/kg

LTE Band 38 50%RB(20MHz) Body Back/High Channel/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 0.9490 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.130 W/kg
SAR(1 g) = 0.053 W/kg; SAR(10 g) = 0.022 W/kg
Maximum value of SAR (measured) = 0.0990 W/kg



0 dB = 0.0990 W/kg = -10.04 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.22.2021 21:44:18

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-TDD(USA) 20MHz 50%RB QPSK (0); Frequency: 2645 MHz; Duty Cycle: 1:1.59956

Medium parameters used (interpolated): $f = 2645$ MHz; $\sigma = 2.078$ S/m; $\epsilon_r = 37.956$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.35, 7.35, 7.35); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 41 50%RB(20MHz) Body Back/High Channel/Area Scan (51x61x1):

Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.135 W/kg

LTE Band 41 50%RB(20MHz) Body Back/High Channel/Zoom Scan

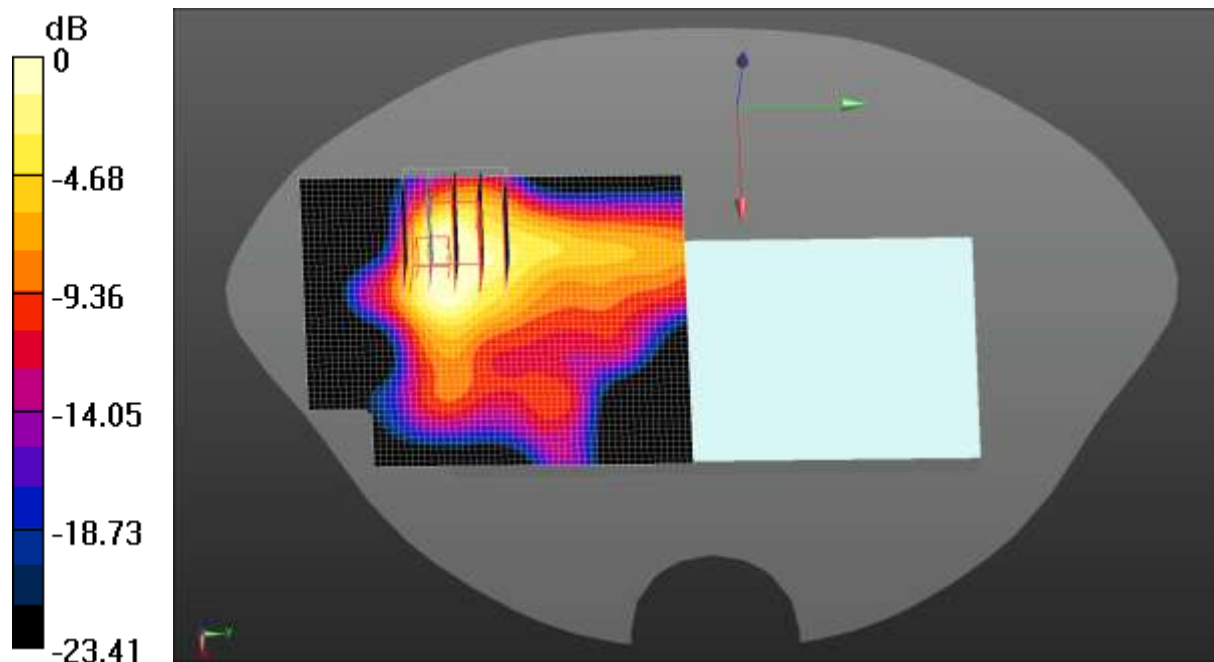
(5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 0.3100 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 0.125 W/kg

SAR(1 g) = 0.051 W/kg; SAR(10 g) = 0.022 W/kg

Maximum value of SAR (measured) = 0.0921 W/kg



0 dB = 0.0921 W/kg = -10.36 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.22.2021 10:24:28

DUT: Mobile Phone; Type: X659B; Serial: 4#

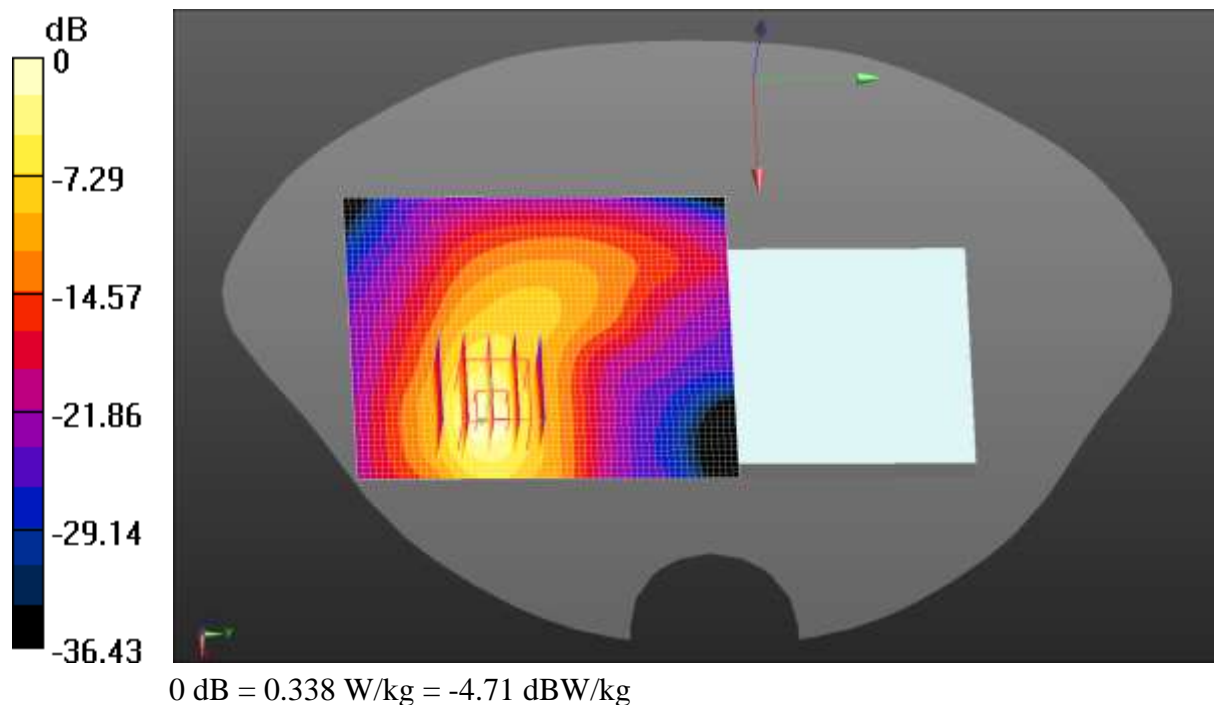
Communication System: UID 0, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps) (0);
 Frequency: 2412 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 2412$ MHz; $\sigma = 1.832$ S/m; $\epsilon_r = 38.864$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.58, 7.58, 7.58); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2.4G WIFI Body Back/Low Channel/Area Scan (51x61x1): Interpolated grid:
 dx=1.200 mm, dy=1.200 mm
 Maximum value of SAR (interpolated) = 0.315 W/kg

2.4G WIFI Body Back/Low Channel/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 0.7250 V/m; Power Drift = -0.17 dB
 Peak SAR (extrapolated) = 0.445 W/kg
SAR(1 g) = 0.207 W/kg; SAR(10 g) = 0.090 W/kg
 Maximum value of SAR (measured) = 0.338 W/kg



Test Laboratory: JYTSZ

Date/Time: 01.19.2021 01:49:43

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, IEEE 802.11a WiFi 5GHz (0); Frequency: 5240 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5240 \text{ MHz}$; $\sigma = 4.588 \text{ S/m}$; $\epsilon_r = 35.985$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(5.42, 5.42, 5.42); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5.2G WIFI Body Back/High Channel/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$

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

Peak SAR (extrapolated) = 0.212 W/kg

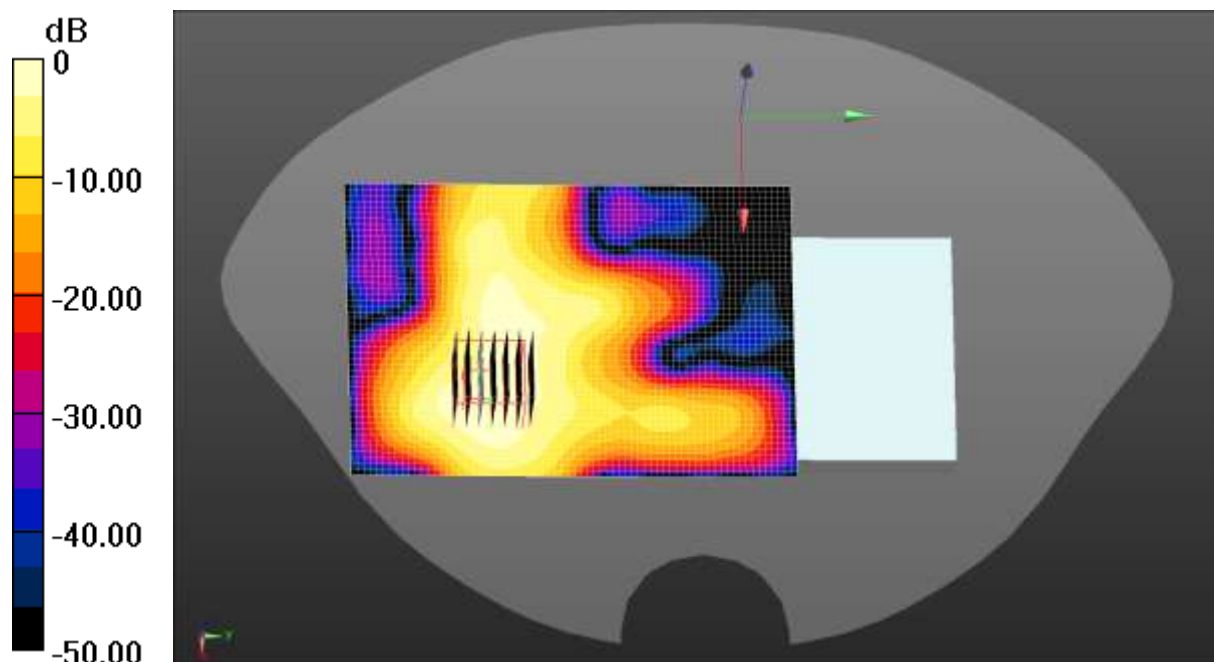
SAR(1 g) = 0.054 W/kg; SAR(10 g) = 0.017 W/kg

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

5.2G WIFI Body Back/High Channel/Area Scan (51x71x1): Interpolated grid:

$dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$

Maximum value of SAR (interpolated) = 0.122 W/kg



0 dB = 0.122 W/kg = -9.14 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.19.2021 05:35:07

DUT: Mobile Phone; Type: X659B; Serial: 4#

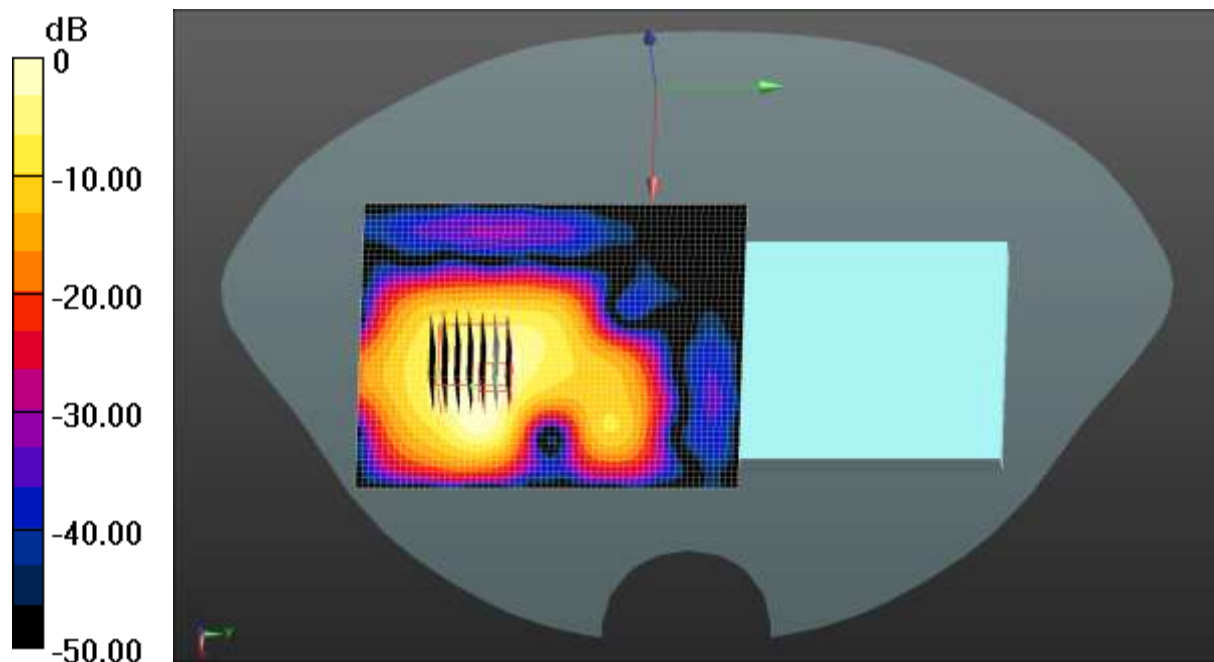
Communication System: UID 0, IEEE 802.11n20 WiFi 5GHz (0); Frequency: 5825 MHz;
 Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 5825 \text{ MHz}$; $\sigma = 5.265 \text{ S/m}$; $\epsilon_r = 34.074$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(4.96, 4.96, 4.96); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5.8G WIFI Body Back/High Channel/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$
 Reference Value = 1.169 V/m; Power Drift = -0.14 dB
 Peak SAR (extrapolated) = 0.408 W/kg
SAR(1 g) = 0.065 W/kg; SAR(10 g) = 0.019 W/kg
 Maximum value of SAR (measured) = 0.205 W/kg

5.8G WIFI Body Back/High Channel/Area Scan (51x61x1): Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$
 Maximum value of SAR (interpolated) = 0.175 W/kg



0 dB = 0.175 W/kg = -7.57 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.10.2021 09:57:52

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, GPRS(2 Slots) (0); Frequency: 836.6 MHz; Duty Cycle: 1:4.10015

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.924$ S/m; $\epsilon_r = 41.527$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(9.71, 9.71, 9.71); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

GPRS 850 2Slots Body Back/Middle Channel/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.9220 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 0.00422 W/kg

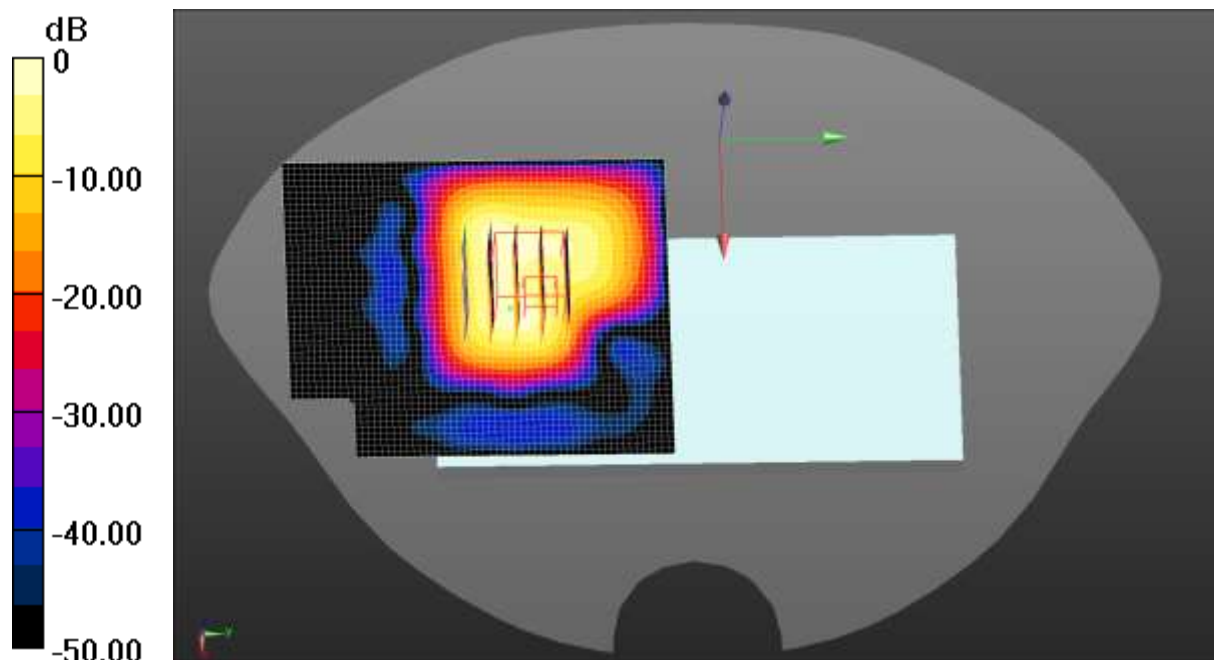
SAR(1 g) = 0.005654 W/kg; SAR(10 g) = 0.002257 W/kg

Maximum value of SAR (measured) = 0.00212 W/kg

GPRS 850 2Slots Body Back/Middle Channel/Area Scan (51x61x1): Interpolated

grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.00716 W/kg



0 dB = 0.00716 W/kg = -21.45 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.13.2021 10:47:50

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, GPRS(2 Slots) (0); Frequency: 1880 MHz; Duty Cycle: 1:4.10015

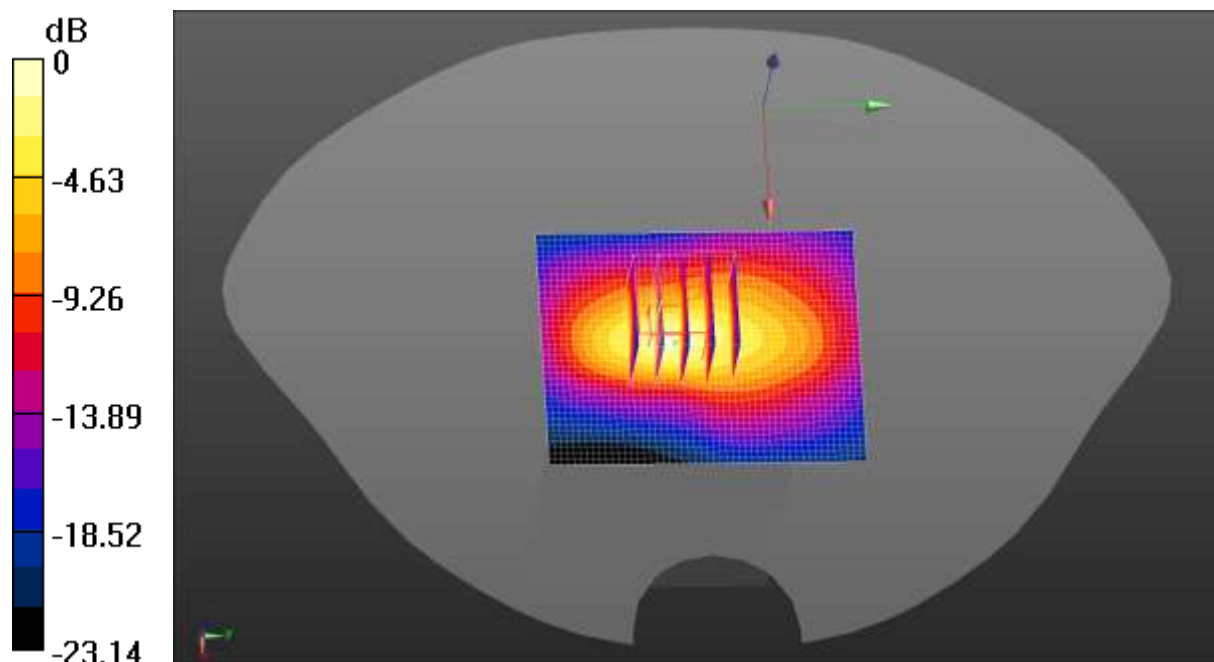
Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.432 \text{ S/m}$; $\epsilon_r = 39.029$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

GPRS 1900 2Slots Body Top/Middle Channel/Area Scan (41x51x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
Maximum value of SAR (interpolated) = 0.278 W/kg

GPRS 1900 2Slots Body Top/Middle Channel/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 15.13 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 0.492 W/kg
SAR(1 g) = 0.242 W/kg; SAR(10 g) = 0.112 W/kg
Maximum value of SAR (measured) = 0.359 W/kg



0 dB = 0.359 W/kg = -4.45 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.13.2021 12:52:46

DUT: Mobile Phone; Type: X659B; Serial: 4#

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

Medium parameters used (interpolated): $f = 1907.6 \text{ MHz}$; $\sigma = 1.436 \text{ S/m}$; $\epsilon_r = 38.872$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA 1900 Body Top/High Channel/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 9.779 V/m; Power Drift = -0.22 dB

Peak SAR (extrapolated) = 0.275 W/kg

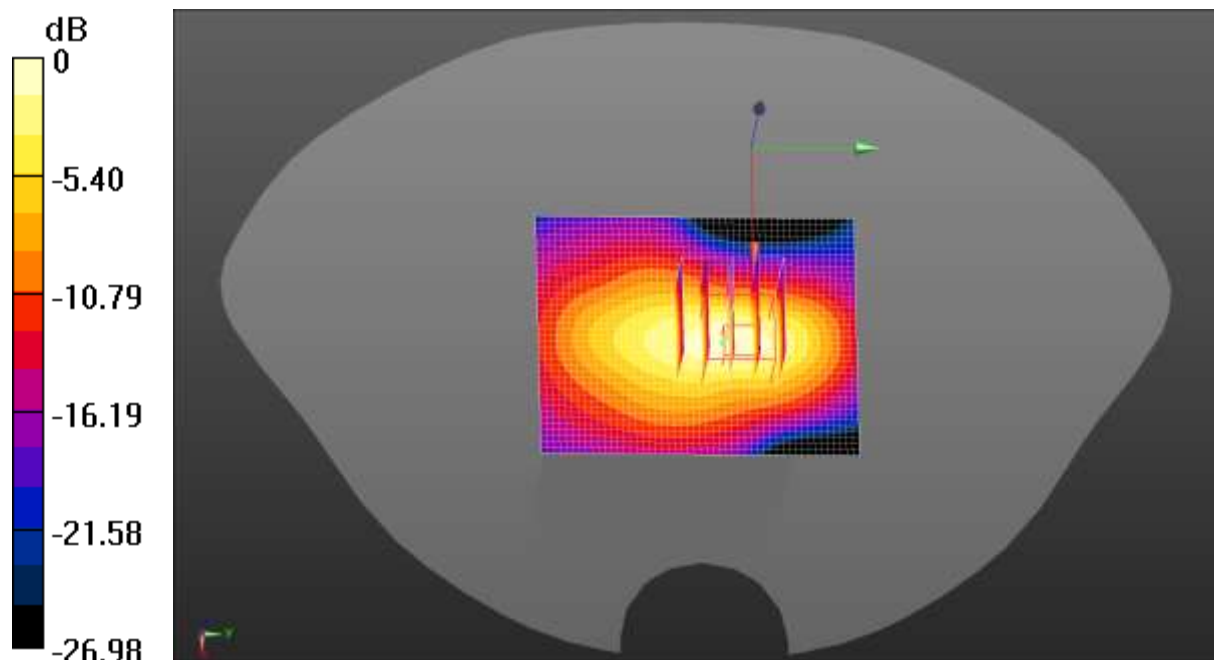
SAR(1 g) = 0.139 W/kg; SAR(10 g) = 0.064 W/kg

Maximum value of SAR (measured) = 0.185 W/kg

WCDMA 1900 Body Top/High Channel/Area Scan (41x51x1): Interpolated grid:

$dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.177 W/kg



0 dB = 0.177 W/kg = -7.52 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.13.2021 16:40:46

DUT: Mobile Phone; Type: X659B; Serial: 4#Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 1880 MHz;
Duty Cycle: 1:1Medium parameters used: $f = 1880$ MHz; $\sigma = 1.432$ S/m; $\epsilon_r = 39.029$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 2 1RB(20MHz) Body Top/Middle Channel/Zoom Scan**(5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.276 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 0.238 W/kg

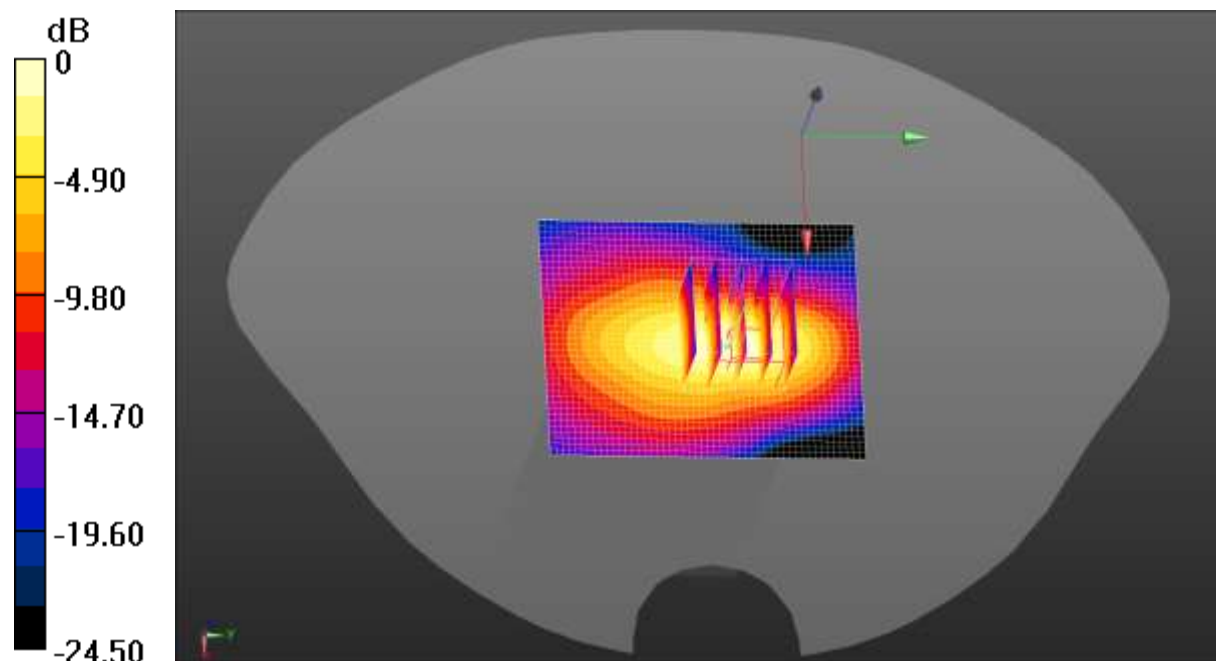
SAR(1 g) = 0.120 W/kg; SAR(10 g) = 0.056 W/kg

Maximum value of SAR (measured) = 0.160 W/kg

LTE Band 2 1RB(20MHz) Body Top/Middle Channel/Area Scan (41x51x1):

Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.149 W/kg



Test Laboratory: JYTSZ

Date/Time: 01.13.2021 17:55:55

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.317$ S/m; $\epsilon_r = 39.749$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.43, 8.43, 8.43); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 4 1RB(20MHz) Body Top/Middle Channel/Area Scan (41x51x1):

Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

LTE Band 4 1RB(20MHz) Body Top/Middle Channel/Zoom Scan

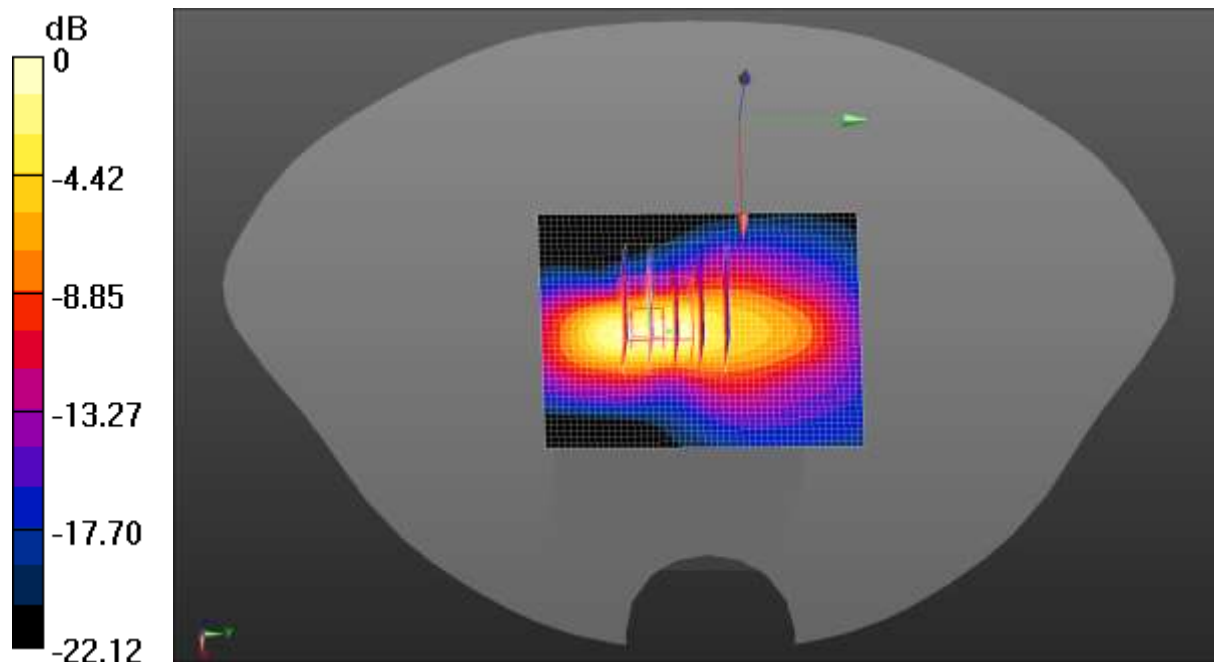
(5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.473 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.275 W/kg

SAR(1 g) = 0.134 W/kg; SAR(10 g) = 0.062 W/kg

Maximum value of SAR (measured) = 0.214 W/kg



0 dB = 0.214 W/kg = -6.70 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.13.2021 15:52:52

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-FDD(USA) 20MHz 50%RB QPSK (0); Frequency: 1880 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.432 \text{ S/m}$; $\epsilon_r = 39.029$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 2 50%RB(20MHz) Body Top/Middle Channel/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 8.369 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 0.197 W/kg

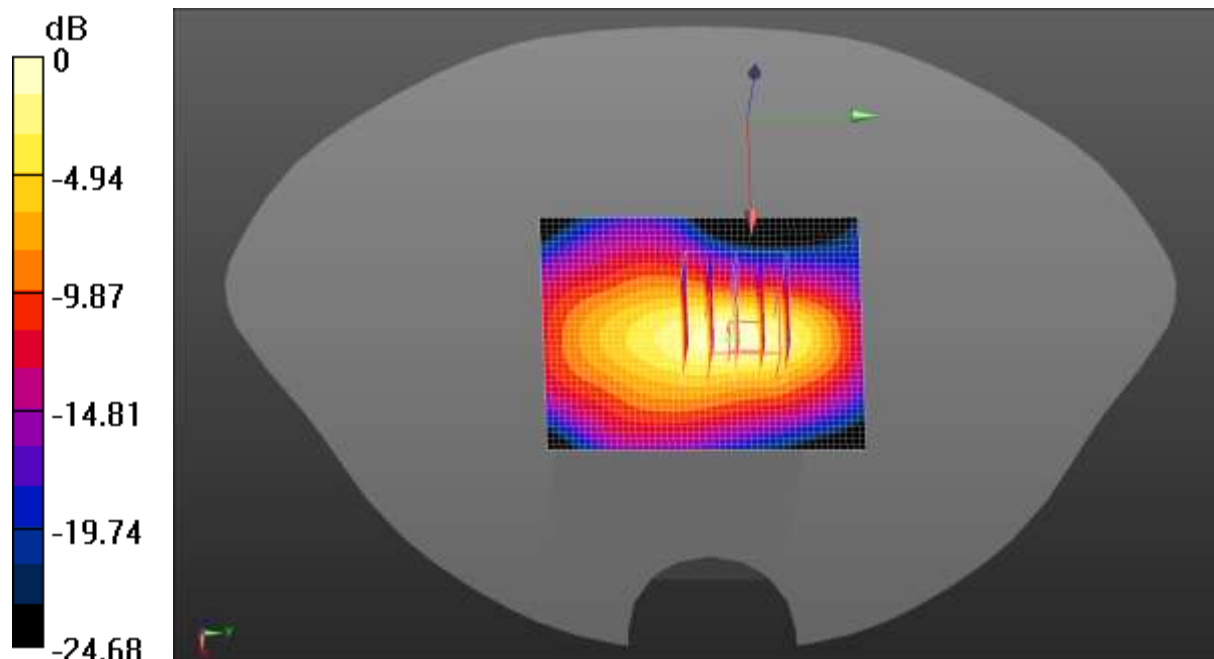
SAR(1 g) = 0.099 W/kg; SAR(10 g) = 0.046 W/kg

Maximum value of SAR (measured) = 0.132 W/kg

LTE Band 2 50%RB(20MHz) Body Top/Middle Channel/Area Scan (41x51x1):

Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.124 W/kg



0 dB = 0.124 W/kg = -9.07 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.13.2021 18:08:20

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, LTE-FDD(USA) 20MHz 50%RB QPSK (0); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 1732.5 \text{ MHz}$; $\sigma = 1.317 \text{ S/m}$; $\epsilon_r = 39.749$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.43, 8.43, 8.43); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE Band 4 50%RB(20MHz) Body Top/Middle Channel/Area Scan (41x51x1):

Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.155 W/kg

LTE Band 4 50%RB(20MHz) Body Top/Middle Channel/Zoom Scan

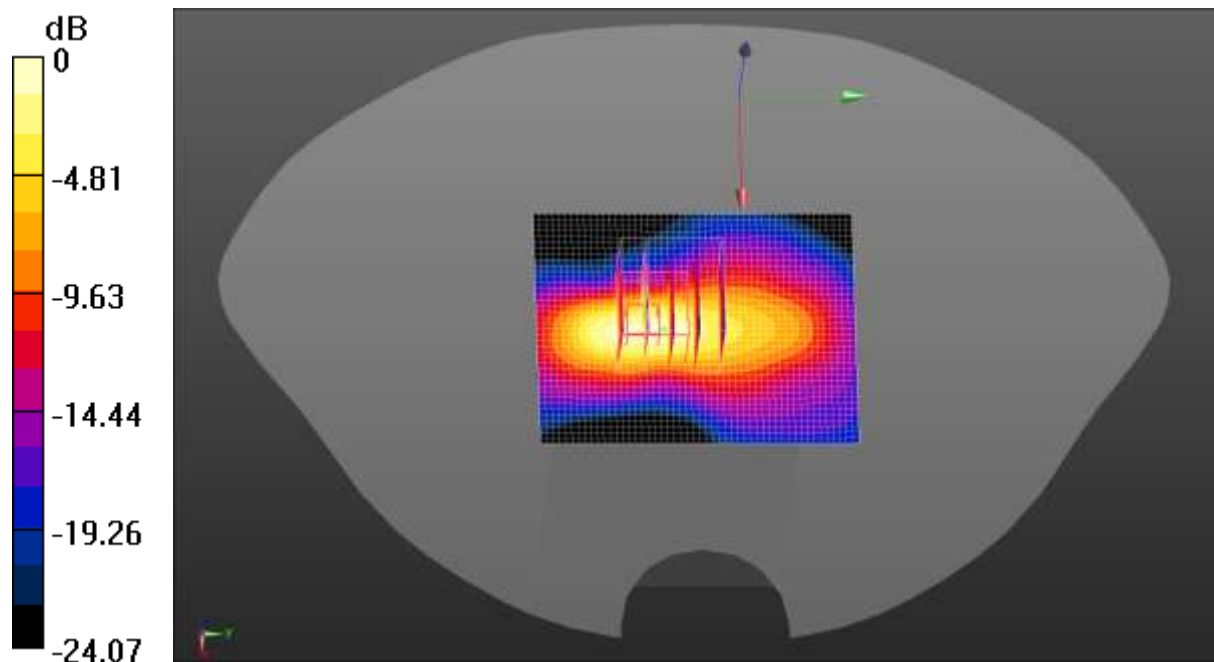
(5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 8.533 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.222 W/kg

SAR(1 g) = 0.109 W/kg; SAR(10 g) = 0.050 W/kg

Maximum value of SAR (measured) = 0.172 W/kg



0 dB = 0.172 W/kg = -7.64 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 01.19.2021 02:40:24

DUT: Mobile Phone; Type: X659B; Serial: 4#

Communication System: UID 0, IEEE 802.11a WiFi 5GHz (0); Frequency: 5240 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5240 \text{ MHz}$; $\sigma = 4.588 \text{ S/m}$; $\epsilon_r = 35.985$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(5.42, 5.42, 5.42); Calibrated: 09.23.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5.2G WIFI Body Top/High Channel/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$

Reference Value = 2.391 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.329 W/kg

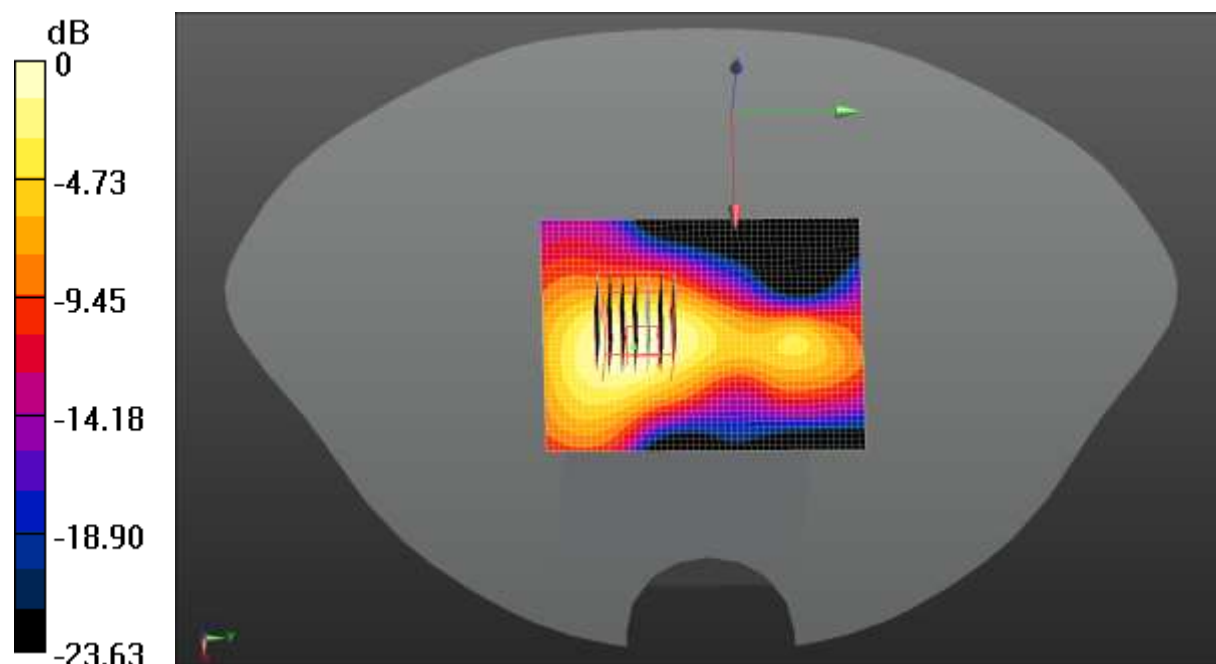
SAR(1 g) = 0.117 W/kg; SAR(10 g) = 0.038 W/kg

Maximum value of SAR (measured) = 0.288 W/kg

5.2G WIFI Body Top/High Channel/Area Scan (41x51x1): Interpolated grid:

$dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$

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



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

Appendix C: System Calibration Certificate

Calibration information for E-field probes



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 CALIBRATION
 CNAS L0570

Client **CCIS**

Certificate No: **Z20-60314**

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN : 3924

Calibration Procedure(s): FF-Z11-004-02
 Calibration Procedures for Dosimetric E-field Probes

Calibration date: September 23, 2020

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature(22±3)°C and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	101919	16-Jun-20(CTTL, No.J20X04344)	Jun-21
Power sensor NRP-Z91	101547	16-Jun-20(CTTL, No.J20X04344)	Jun-21
Power sensor NRP-Z91	101548	16-Jun-20(CTTL, No.J20X04344)	Jun-21
Reference 10dBAttenuator	18N50W-10dB	10-Feb-20(CTTL, No.J20X00525)	Feb-22
Reference 20dBAttenuator	18N50W-20dB	10-Feb-20(CTTL, No.J20X00526)	Feb-22
Reference Probe EX3DV4	SN 7307	29-May-20(SPEAG, No.EX3-7307_May20)	May-21
DAE4	SN 1556	4-Feb-20(SPEAG, No.DAE4-1556_Feb20)	Feb-21
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
SignalGenerator MG3700A	6201052605	23-Jun-20(CTTL, No.J20X04343)	Jun-21
Network Analyzer E5071C	MY46110673	10-Feb-20(CTTL, No.J20X00515)	Feb-21

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: September 25, 2020

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



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Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A,B,C,D	modulation dependent linearization parameters
Polarization Φ	Φ rotation around probe axis
Polarization θ	θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i $\theta=0$ is normal to probe axis

Connector Angle information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- **NORM_{x,y,z}**: Assessed for E-field polarization $\theta=0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not effect the E^2 -field uncertainty inside TSL (see below ConvF).
- **NORM(f)_{x,y,z} = NORM_{x,y,z} * frequency_response** (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- **DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- **PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics.
- **A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; VR_{x,y,z}; A,B,C** are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- **ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty valued are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- **Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- **Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- **Connector Angle**: The angle is assessed using the information gained by determining the NORM_x (no uncertainty required).



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DASY/EASY – Parameters of Probe: EX3DV4 – SN:3924

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm($\mu V/(V/m)^2$) ^A	0.50	0.42	0.67	±10.0%
DCP(mV) ^B	101.3	100.1	99.8	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu V}$	C	D dB	VR mV	Unc ^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	172.6	±1.9%
		Y	0.0	0.0	1.0		149.2	
		Z	0.0	0.0	1.0		200.0	

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor $k=2$, which for a normal distribution Corresponds to a coverage probability of approximately 95%.

^A The uncertainties of Norm X, Y, Z do not affect the E²-field uncertainty inside TSL (see Page 4 and Page 5).
^B Numerical linearization parameter: uncertainty not required.
^E Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.



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DASY/EASY – Parameters of Probe: EX3DV4 – SN:3924

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz] ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unct. (k=2)
750	41.9	0.89	10.11	10.11	10.11	0.40	0.75	±12.1%
835	41.5	0.90	9.71	9.71	9.71	0.18	1.20	±12.1%
900	41.5	0.97	9.67	9.67	9.67	0.21	1.15	±12.1%
1750	40.1	1.37	8.43	8.43	8.43	0.20	1.11	±12.1%
1900	40.0	1.40	8.14	8.14	8.14	0.22	1.14	±12.1%
2300	39.5	1.67	7.83	7.83	7.83	0.48	0.72	±12.1%
2450	39.2	1.80	7.58	7.58	7.58	0.50	0.75	±12.1%
2600	39.0	1.96	7.35	7.35	7.35	0.60	0.69	±12.1%
5250	35.9	4.71	5.42	5.42	5.42	0.45	1.32	±13.3%
5600	35.5	5.07	4.85	4.85	4.85	0.50	1.20	±13.3%
5750	35.4	5.22	4.96	4.96	4.96	0.55	1.20	±13.3%

^C Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

^F At frequency below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^G Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.



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DASY/EASY – Parameters of Probe: EX3DV4 – SN:3924

Calibration Parameter Determined in Body Tissue Simulating Media

f [MHz] ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unct. (k=2)
750	55.5	0.96	10.06	10.06	10.06	0.40	0.82	±12.1%
835	55.2	0.97	9.70	9.70	9.70	0.18	1.36	±12.1%
900	55.0	1.05	9.72	9.72	9.72	0.28	1.04	±12.1%
1750	53.4	1.49	8.16	8.16	8.16	0.20	1.28	±12.1%
1900	53.3	1.52	7.78	7.78	7.78	0.21	1.34	±12.1%
2300	52.9	1.81	7.65	7.65	7.65	0.47	0.85	±12.1%
2450	52.7	1.95	7.50	7.50	7.50	0.55	0.78	±12.1%
2600	52.5	2.16	7.29	7.29	7.29	0.66	0.69	±12.1%
5250	48.9	5.36	4.86	4.86	4.86	0.50	1.40	±13.3%
5600	48.5	5.77	4.24	4.24	4.24	0.60	1.30	±13.3%
5750	48.3	5.94	4.35	4.35	4.35	0.55	1.45	±13.3%

^C Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

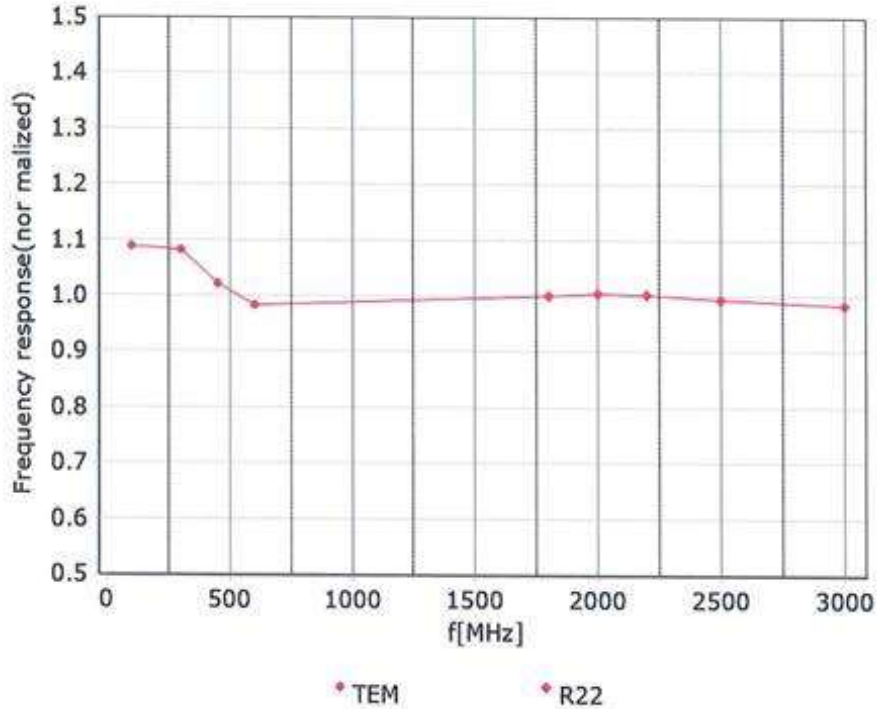
^F At frequency below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^G Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.



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Frequency Response of E-Field (TEM-Cell: ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: $\pm 7.4\%$ ($k=2$)

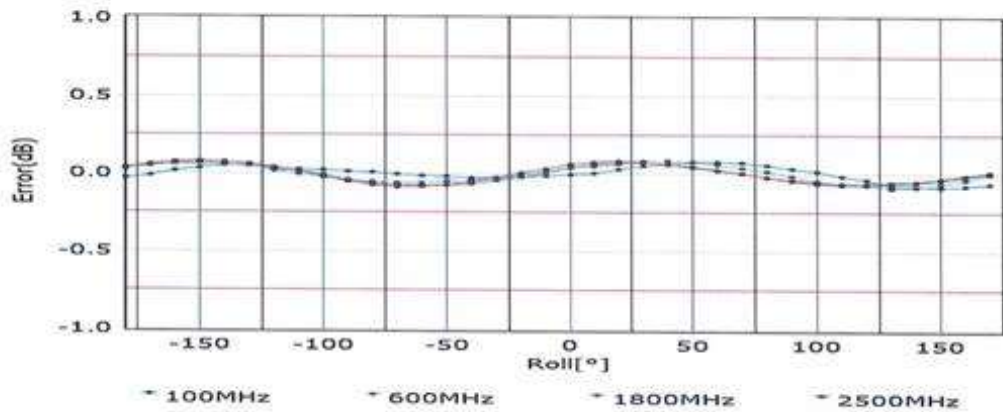
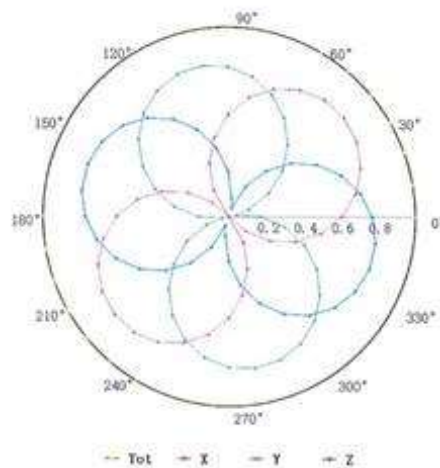
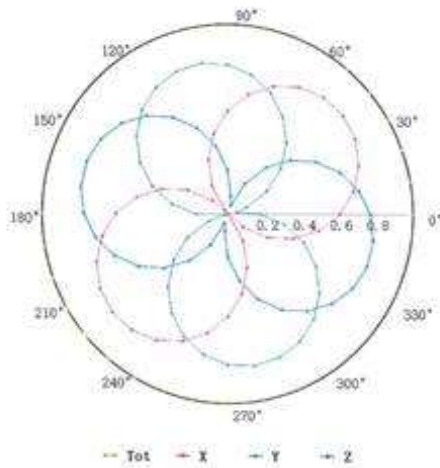


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Receiving Pattern (Φ), $\theta=0^\circ$

f=600 MHz, TEM

f=1800 MHz, R22



Uncertainty of Axial Isotropy Assessment: $\pm 1.2\%$ ($k=2$)