

SAR Report

Applicant : 台灣小米通訊有限公司
Product Type : Mobile Phone
Trade Name : Redmi
Model Number : 21061119DG
Applicable Standard : CNS 14959 / CNS 14958-1
Received Date : Jul. 01, 2021
Test Period : Jul. 15. ~ Jul. 17, 2021
Issued Date : Aug. 03, 2021

Issued by

Tested By :

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Taiwan Accreditation Foundation accreditation number: 1330

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	Jul. 26, 2021	Initial Issue	Nicole Chu
01	Aug. 03, 2021	Revised 10.1 chapter (P.17)	Nicole Chu

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1. General Information

1.1 Reference Applicable Standard

Standard	Description	Version
CNS 14959	Limit for exposing to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz)	2005-12
CNS 14958-1	Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures – Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)	2005-12

1.2 Test Site Environment

Items	Required (IEEE 1528-2013)	Actual
Temperature (°C)	18-25	21-23

1.3 Laboratory Information

Issue Location

Site Name: A Test Lab Techno Corp.

<http://www.atl-lab.com.tw/e-index.htm>

Site Address: No. 140-1, Changan Street, Bade District, Taoyuan City 33465, Taiwan (R.O.C.)

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2. Summary of Maximum Reported SAR Value

Equipment Class	Mode	Highest Reported 10g SAR (W/Kg)
		Head standalone SAR 10 g(W/kg)
Licensed	GSM900	0.592
	WCDMA Band I	0.564
	WCDMA Band VIII	0.541
	LTE Band 1	0.586
	LTE Band 3	0.494
	LTE Band 7	0.395
	LTE Band 8	0.479
	LTE Band 28	0.477
	LTE Band 38	0.548
	LTE Band 41	0.469

3. Description of Equipment under Test (EUT)

Applicant	台灣小米通訊有限公司 臺北市中正區新生南路 1 段 50 號 2 樓之 2				
Manufacturer	小米通訊技術有限公司 中國北京市海淀區西二旗中路 33 號院 6 號樓 9 層 019 號				
Product Type	Mobile Phone				
Trade Name	Redmi				
Model Number	21061119DG				
IMEI No.	IMEI 1: 868393050034289, IMEI 2: 868393050034297				
Test Device	Production Unit				
TX Frequency	890.2 - 914.8 MHz (PGSM 900) 1920 - 1980 MHz (WCDMA Band 1) 885 - 915 MHz (WCDMA Band 8) 1920 - 1980 MHz LTE Band 1 (BW 5, 10, 15, 20 MHz) 1710 - 1785 MHz LTE Band 3 (BW 1.4, 3, 5, 10, 15, 20 MHz) 2500 - 2570 MHz LTE Band 7 (BW 5, 10, 15, 20 MHz) 885 - 915 MHz LTE Band 8 (BW 1.4, 3, 5, 10 MHz) 703 - 748 MHz LTE Band 28 (BW 3, 5, 10, 15, 20 MHz) 2570 - 2620 MHz LTE Band 38 (BW 5, 10, 15, 20 MHz) 2535 - 2655 MHz LTE Band 41 (BW 5, 10, 15, 20 MHz)				
Max. Avg. Conducted Power	Ant Upper				
	1.858	W /	32.69	dBm	PGSM 900
	0.114	W /	20.58	dBm	WCDMA Band 1
	0.216	W /	23.35	dBm	WCDMA Band 8
	0.143	W /	21.55	dBm	LTE Band 1
	0.148	W /	21.69	dBm	LTE Band 3
	0.049	W /	16.87	dBm	LTE Band 7
	0.190	W /	22.78	dBm	LTE Band 8
	0.272	W /	24.34	dBm	LTE Band 28
	0.095	W /	19.76	dBm	LTE Band 38
	0.097	W /	19.89	dBm	LTE Band 41
	Ant Lower				
	1.791	W /	32.53	dBm	PGSM 900
	0.281	W /	24.48	dBm	WCDMA Band 1
	0.254	W /	24.05	dBm	WCDMA Band 8
	0.243	W /	23.86	dBm	LTE Band 1
	0.252	W /	24.01	dBm	LTE Band 3
	0.225	W /	23.53	dBm	LTE Band 7
	0.253	W /	24.03	dBm	LTE Band 8
	0.244	W /	23.88	dBm	LTE Band 28
	0.254	W /	24.04	dBm	LTE Band 38
	0.237	W /	23.74	dBm	LTE Band 41

Max. SAR Measurement	0.592 W/kg Head SAR
Device Category	Portable
RF Exposure Environment	General Population / Uncontrolled
Battery Option	Standard
Application Type	Certification

Note:

This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment / general population exposure limits specified in Std. C95.1-2005 & CNS14959 & PLMN ALL and had been tested in accordance with the measurement procedures specified in IEEE Std. 1528-2013 and IEC 62209-1.

Antenna list:

Antenna	Brand	Model Number	Type	Frequency	Max. Gain (dBi)
ANT 0 (Main Antenna)	ICT	ICT-K19A-MAIN-A1	PIFA Antenna	GSM900	-3.3
				WCDMA (Band 1)	-0.4
				WCDMA (Band 8)	-3.3
				LTE2100 (Band 1)	-0.4
				LTE1800 (Band 3)	-0.2
				LTE2600 (Band 7)	1.6
				LTE900 (Band 8)	-3.3
				LTE700 (Band 28)	-3.4
				LTE2600 (Band 38)	0
				LTE2500 (Band 41)	0
ANT 1 (Div Antenna)	ICT	ICT-K19A-DIV-A1	PIFA Antenna	GSM900	-6.2
				WCDMA (Band 1)	-0.2
				WCDMA (Band 8)	-6.2
				LTE2100 (Band 1)	-0.2
				LTE1800 (Band 3)	-1.4
				LTE2600 (Band 7)	-1.7
				LTE900 (Band 8)	-6.2
				LTE700 (Band 28)	-4.8
				LTE2600 (Band 38)	-1.6
				LTE2500 (Band 41)	-1.6

Antenna	Brand	Model Number	Type	Frequency	Max. Gain (dBi)
ANT	ICT	ICT-K19A-3IN1-A1	PIFA Antenna	Bluetooth	0
				2412 - 2462 MHz	0
				5150 - 5250 MHz	0.2
				5250 - 5350 MHz	0.2
				5470 - 5725 MHz	0
				5725 - 5850 MHz	0.2
Antenna	Brand	Model Number	Type	Frequency	Modulation
NFC	Innowave	RX-K19A-NFC	FPC+Ferrite Antenna	13.56 MHz (TX+RX)	ASK

附屬裝置表:

裝置名稱	廠牌	型號	備註
內建固定式電池(1)	MI	BN5A	3.87 VDC, 4900 mAh 製造商: Sunwoda Electronic Co., Ltd.
內建固定式電池(2)	MI	BN5A	3.87 VDC, 4900 mAh. 製造商: Zhuhai CosMX Battery Co.,Ltd.
電源供應器	MI	MDY-11-ES	INPUT : AC 100-240 V, 50/60 Hz, 0.6 A OUTPUT : 正常輸出: 5.0 V, 3.0 A 快速輸出: 3.6-12.0 V, 3.0-1.67 A (22.5 W Max)
USB Cable(1)	MI	H73312	STD-A → Type-C Shielded, 1.0 m
USB Cable(2)	MI	K73312	STD-A → Type-C Shielded, 1.0 m
USB Cable(3)	MI	B73312	STD-A → Type-C Shielded, 1.0 m

4. Introduction

The A Test Lab Techno Corp. has performed measurements of the maximum potential exposure to the user. The test procedures, as described in IEC 62209-1 / CNS14959 / PLMN ALL were employed and they specify the maximum exposure limit of 2.0W/kg as averaged over any 10 gram of tissue. A description of the product and operating configuration, detailed summary of the test results, methodology and procedures used in the equipment are included within this test report.

5. SAR Definition

Specific Absorption Rate (SAR) is defined as 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 :

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

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

SAR measurement can be related to the electrical field in the tissue by

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

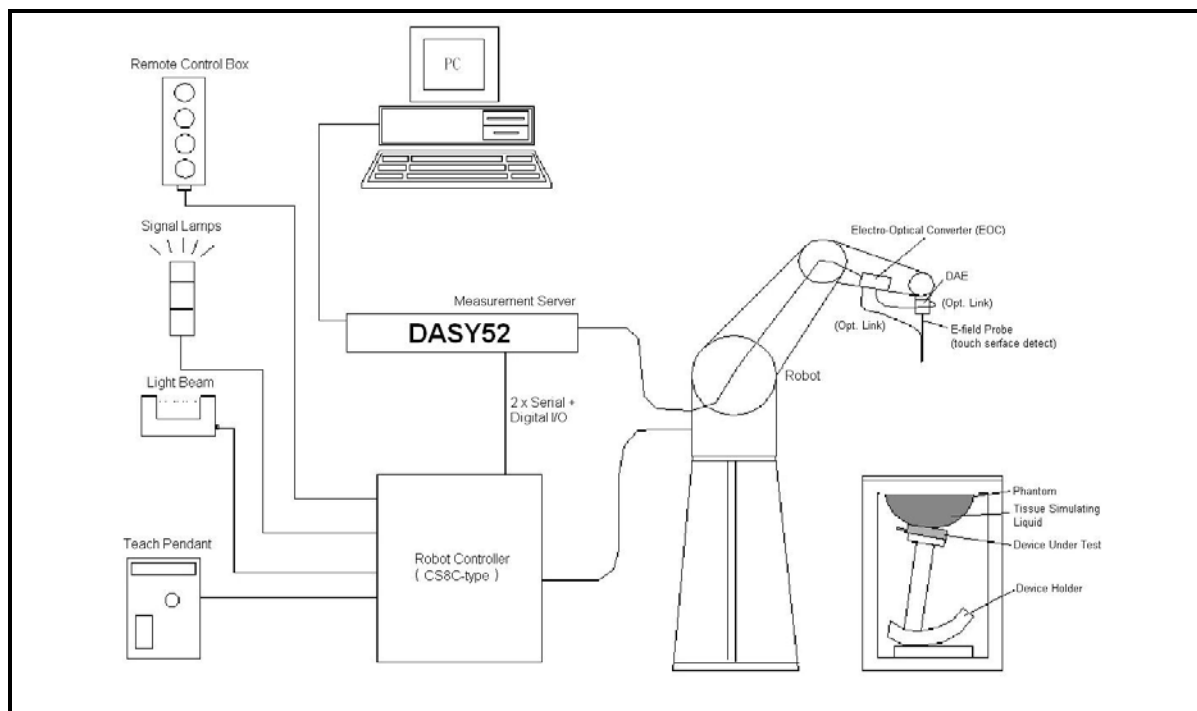
Where :

σ = conductivity of the tissue (S/m)

ρ = mass density of the tissue (kg/m³)

E = RMS electric field strength (V/m)

6. SAR Measurement Setup



The DASY52 system for performing compliance tests consists of the following items:

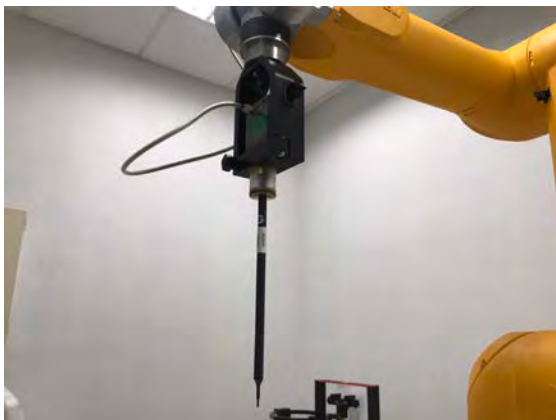
1. A standard high precision 6-axis robot (Stäubli TX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
2. A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
3. A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
4. The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
5. A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
6. A computer operating Windows 7 or Windows 8.
7. DASY52 software.
8. Remote controls with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
9. The SAM twin phantom enabling testing left-hand and right-hand usage.
10. The device holder for handheld mobile phones.
11. Tissue simulating liquid mixed according to the given recipes.
12. Validation dipole kits allowing validating the proper functioning of the system.

7. System Components

7.1 DASY E-Field Probe System

The SAR measurements were conducted with the dosimetric probe (manufactured by SPEAG), designed in the classical triangular configuration [3] and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multi-fiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY software reads the reflection during a software approach and looks for the maximum using a 2nd order fitting. The approach is stopped when reaching the maximum.

7.1.1 E-Field Probe Specification

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in brain tissue (rotation around probe axis) ± 0.5 dB in brain tissue (rotation normal probe axis)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Calibration	ISO/IEC 17025 calibration service available
 	
EX3DV4 E-Field Probe Probe setup on robot	

7.2 Data Acquisition Electronic (DAE) System

Model	DAE4	
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.	
Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4 mV, 400 mV)	
Input Offset Voltage	< 5 μ V (with auto zero)	
Input Bias Current	< 50 fA	
Dimensions	60 x 60 x 68 mm	

7.3 Robot

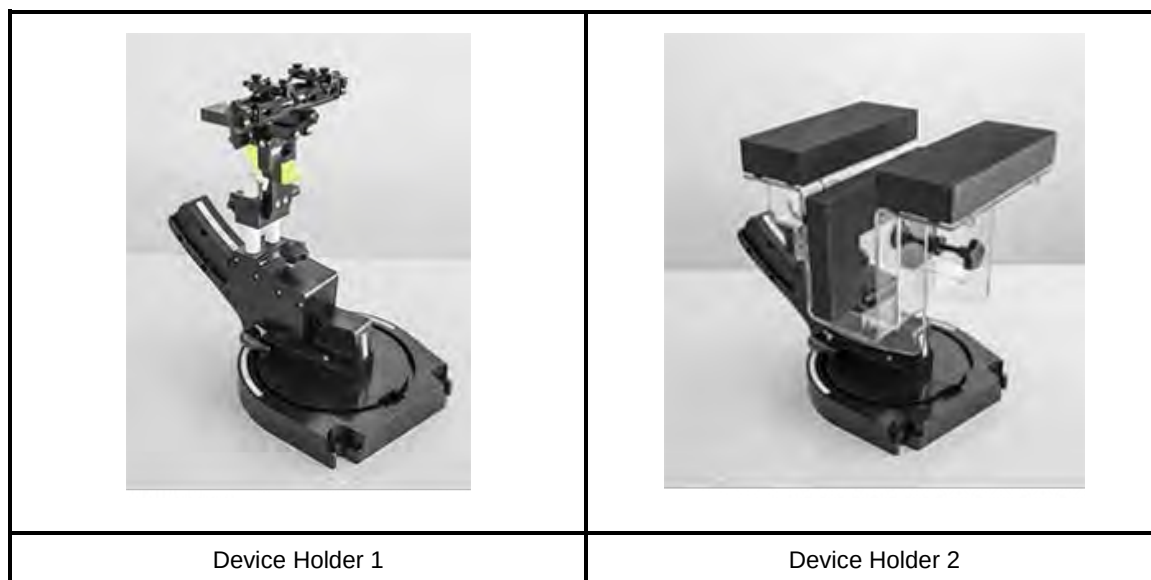
Positioner	Stäubli Unimation Corp.	
Robot Model	TX90XL	
Number of Axes	6	
Norminal Load	5 kg	
Reach	1450 mm	
Repeatability	$\pm$ 0.035 mm	

7.4 Measurement Server

Processor	Stäubli Unimation Corp.	
I/O-board	TX90XL	
Number of Axes	Link to DAE4 16-bit A/D converter for surface detection system Digital I/O interface Serial link to robot Direct emergency stop output for robot	

7.5 Device Holder

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon=3$ and loss tangent $\delta=0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.



7.6 Phantom - SAM v4.0

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

Shell Thickness	2 ±0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	1000×500 mm (L×W)
Table 1. Specification of SAM v4.0	



8. Test Equipment List

Testing Engineer: Jason Tsao / Ted Hsieh

Brand	Name of Equipment	Type/Model	Serial Number	Calibration	
				Cal. Date	Cal.Period
SPEAG	750MHz System Validation Kit	D750V3	1004	2020/09/17	1 year
SPEAG	900MHz System Validation Kit	D900V2	073	2021/04/13	1 year
SPEAG	1800MHz System Validation Kit	D1800V2	265	2021/04/14	1 year
SPEAG	1950MHz System Validation Kit	D1950V3	1117	2021/04/13	1 year
SPEAG	2600MHz System Validation Kit	D2600V2	1007	2020/09/29	1 year
SPEAG	Dosimetric E-Field Probe	EX3DV4	7647	2021/04/15	1 year
SPEAG	Data Acquisition Electronics	DAE4	1253	2020/12/16	1 year
SPEAG	Measurement Server	SE UMS 011 BB	1241	NCR	
SPEAG	Phantom	SAM V4.0	TP-1623	NCR	
SPEAG	Robot	Staubli TX90XL	F11/5G9EA1/A/01	NCR	
SPEAG	Software	DASY52 V52.10 (3)	N/A	NCR	
SPEAG	Software	SEMCAD X V14.6.10(7331)	N/A	NCR	
SPEAG	Software	SEMCAD X V14.6.13(7474)	N/A	NCR	
R&S	Wireless Communication Test Set	CMU200	112387	2021/03/17	1 year
Anritsu	Radio Communication Analyzer	MT8820C	6201342039	2020/12/03	1 year
SPEAG	Network Analyzer	DAKS_VNA R140	0010318	2021/05/26	1 year
SPEAG	Dielectric Probe Kit	DAKS-3.5	1101	2021/05/26	1 year
HILA	Digital Thermometer	TM-906A	1500033	2020/10/28	1 year
Agilent	Power Sensor	8481H	3318A20779	2021/05/26	1 year
Agilent	Power Meter	EDM Series E4418B	GB40206143	2021/05/26	1 year
Anritsu	Power Sensor	MA2411B	1126022	2020/09/01	1 year
Anritsu	Power Meter	ML2495A	1135009	2020/09/01	1 year
Agilent	Signal Generator	E8257D	MY44320425	2021/02/18	1 year
Agilent	Spectrum Analyzer	N9030A	MT-112	2021/01/08	1 year
Agilent	Dual Directional Coupler	778D	50334	NCR	
Woken	Dual Directional Coupler	0100AZ20200801O	11012409517	NCR	
Mini-Circuits	Power Amplifier	EMC014225P	980292	NCR	
Mini-Circuits	Power Amplifier	EMC2830P	980293	NCR	
Aisi	Attenuator	IEAT 3dB	N/A	NCR	

Table 2. Test Equipment List

9. Tissue Simulating Liquids

The Head and Muscle mixtures consist of a viscous gel using hydroxethylcellulouse (HEC) gelling agent and saline solution. Preservation with a bacteriacide is added and visual inspection is made to ensure air bubbles are not trapped during the mixing process. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the tissue.

The dielectric parameters of the liquids were verified prior to the SAR evaluation using an 85070C Dielectric Probe Kit and an E5071B Network Analyzer.

Ingredient	Frequency					
	HSL750 - Head	HSL900 - Head	HSL1800 - Head	HSL1950 - Head	HSL2600 - Head	HSL3500 - Head
Water	49.23 %	51.07 %	54.88 %	55.27 %	55.67 %	71.8 %
HEC	0.27 %	0.23 %	0 %	0 %	0 %	0 %
Sugar	48.93 %	47.31 %	0 %	0 %	0 %	0 %
Preventol	0.29 %	0.24 %	0 %	0 %	0 %	0 %
Salt	1.28 %	1.15 %	0.21 %	0.26 %	0.29 %	0 %
Glycol monobutyl	0 %	0 %	44.91 %	44.47 %	44.04 %	44.04 %
Triton X-100	0 %	0 %	0 %	0 %	0 %	20.0 %
DGBE	0 %	0 %	44.50 %	44.50 %	45.10 %	8.0 %

Table 3. Recipes for Head Tissue Simulating Liquids

Target Frequency	Head	
(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 ρ = 1000 kg/m ³)		
Table 4. Tissue dielectric parameters for head phantoms		

10. Measurement Process

10.1 Device and Test Conditions

The device was put in operation using the **R&S CMU200 or Agilent E5515C (8960) wireless Communication Test Set**. Communication between device and tester was established by air-link in order to simulate the actual usage as close as possible. The spatial peak SAR values were assessed for the lowest, middle and highest channels defined by **PGSM 900** (#01=890.2 MHz, #62=902.4 MHz, #124=914.8 MHz) and **WCDMA BAND 1** (#9612=1922.4 MHz, #9750=1950.0 MHz, #9888=1977.6 MHz) and **WCDMA BAND 8** (#2737= 887.4 MHz, #2800= 900.0 MHz, #2863= 912.6 MHz) systems. Power level was set to its maximum, i.e., **PGSM 900** nominal maximum output power class 4 (PCL 5, 33 dBm) and **WCDMA BAND 1** nominal maximum output power class 3 and **WCDMA BAND 8** nominal maximum output power class 3. These parameters will need to be replaced for the individual phone tested.

The device supports the Audio receiver detection mechanism. The audio receiver is used to determine head. When operating in a call at the head, the relevant power levels are set for 2G&3G&4G accordingly, in order to comply with SAR requirement.

1) For UAT antenna :

a) Head exposure conditions:

Reduce power - GSM900, WCDMA B1/B8, LTE B1/ B3 / B7 / B8 / B28 / B38 / B41, while the device is transmitting at the UAT antenna, and the audio is actively routed through the earpiece receiver, and the proximity sensor is triggered which indicating the next-to-head condition, Operations power enabled for those bands.

2) For LAT antenna :

a) Head exposure conditions:

Reduce power - GSM900, WCDMA B1/B8, LTE B1/ B3 / B7 / B8 / B28 / B38 / B41, No product-specific exposure conditions. Therefore the evaluation test full power for the SAR.



The Device information is declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or Operating.

The device should be set to maximum output power within the applied power tune-up range during the SAR test. Within the tune-up tolerance, but not more than 2 dB lower than the maximum tune-up tolerance limit.

If the measured channel used for SAR evaluation has an output power which is less than the maximum rated power including the upper tolerance (maximum possible power), it is recommended that the final SAR test result is mathematically scaled up to report a SAR level which would be representative of the worst case condition (maximum SAR level).

* Report SAR = measured SAR * (Tune-up limit power (mW) / EUT RF output power (mW)),
(where tune-up limit is the maximum rated power among all production units.)

For dual SIM operation, when power is not influenced by both SIM1 and SIM2, the SIM1 with higher power is selected for test.

10.2 System Performance Check

10.2.1 Symmetric Dipoles for System Validation

Construction	Symmetrical dipole with 1/4 balun enables measurement of feed point impedance with NWA matched for use near flat phantoms filled with head simulating solutions Includes distance holder and tripod adaptor Calibration Calibrated SAR value for specified position and input power at the flat phantom in head simulating solutions.
Return Loss	> 20 dB at specified verification position
Options	Dipoles for other frequencies or solutions and other calibration conditions are available upon request

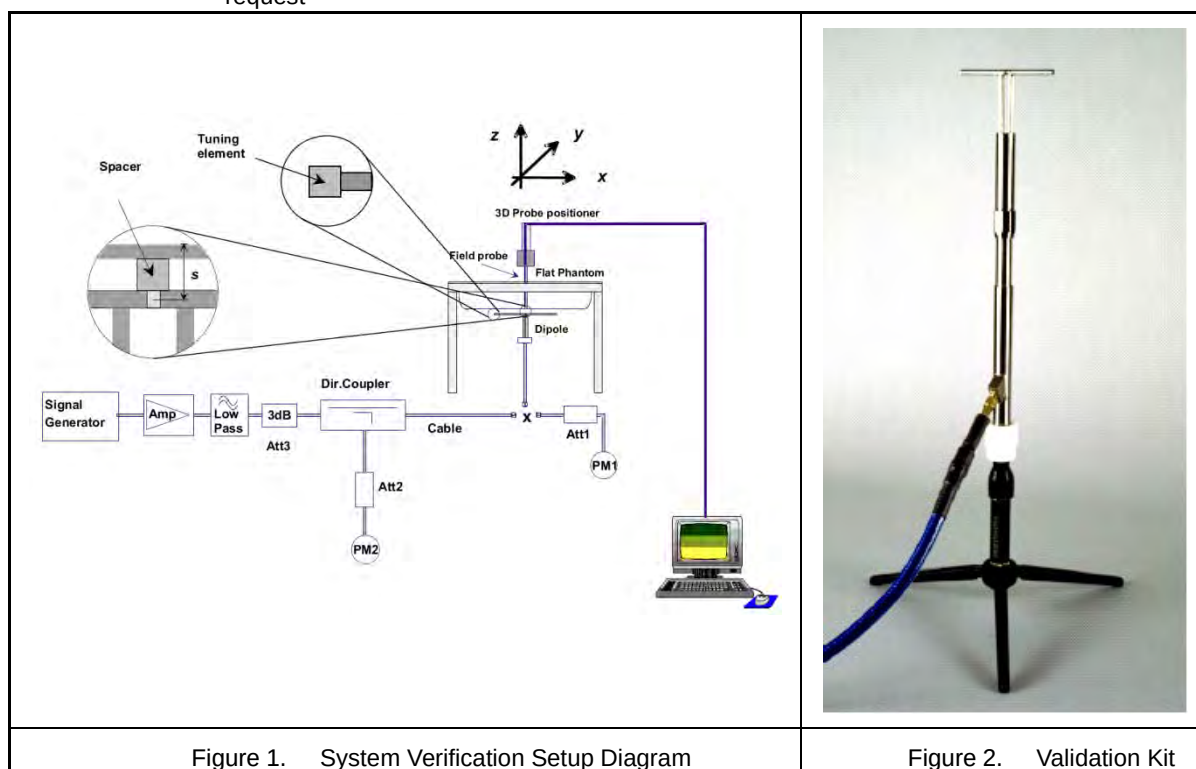


Figure 1. System Verification Setup Diagram

Figure 2. Validation Kit

10.2.2 Validation

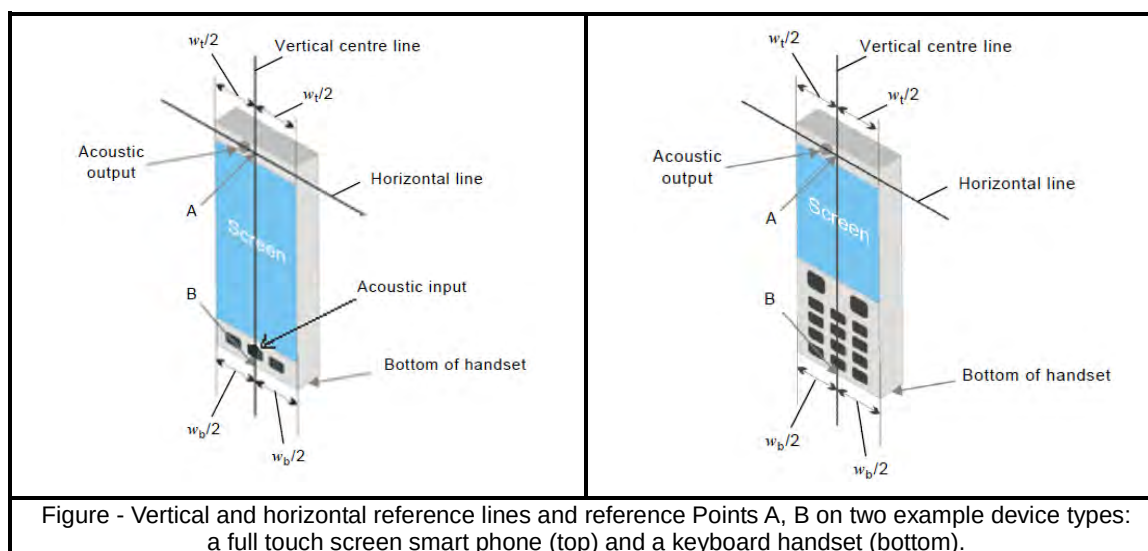
Prior to the assessment, the system validation kit was used to test whether the system was operating within its specifications of $\pm 10\%$.

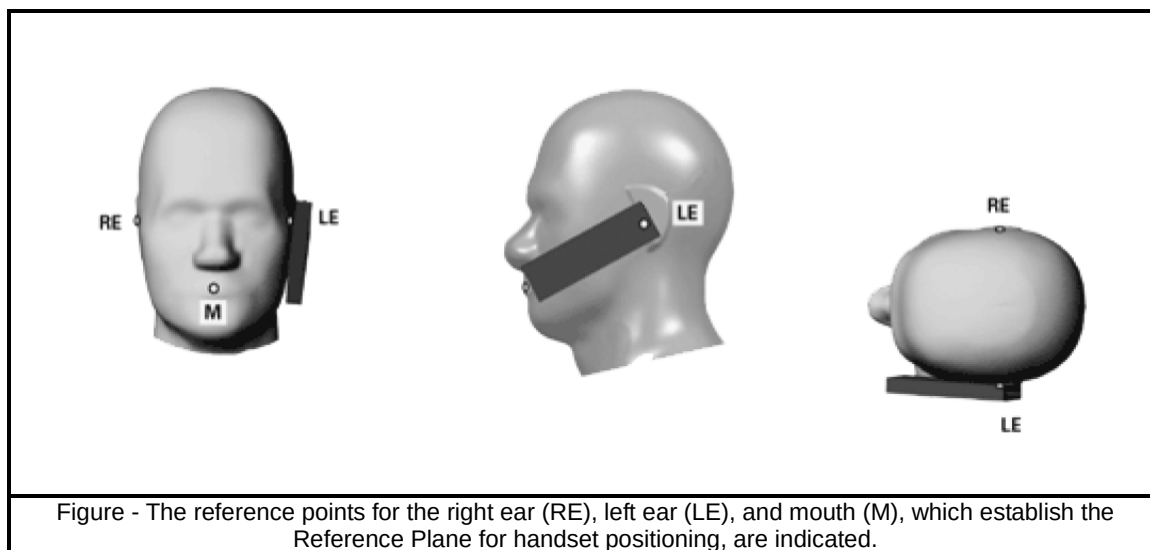
Mixture Type	Frequency (MHz)	Power	Probe	Dipole	SAR _{1g} (W/Kg)	Normalize to 1 Watt 1 g (W/Kg)	1 W Target SAR _{1g} (W/Kg)	SAR _{10g} (W/Kg)	Normalize to 1 Watt 10 g (W/Kg)	1 W Target SAR _{10g} (W/Kg)	Difference percentage 1 g	Difference percentage 10 g	Date
			Model / Serial No.	Model / Serial No.									
Head	750	250 mW	EX3DV4-S N7647	D750V3 – SN1004	2.02	8.08	8.37	1.33	5.32	5.48	-3.5%	-2.9%	Jul. 16, 2021
Head	900	250 mW	EX3DV4-S N7647	D900V2 – SN073	2.59	10.36	11.00	1.68	6.72	7.16	-5.8%	-6.1%	Jul. 16, 2021
Head	1800	250 mW	EX3DV4-S N7647	D1800V2 – SN265	9.93	39.72	39.30	5.06	20.24	20.20	1.1%	0.2%	Jul. 15, 2021
Head	1950	250 mW	EX3DV4-S N7647	D1950V3 – SN1117	9.33	37.32	40.10	4.84	19.36	20.20	-6.9%	-4.2%	Jul. 15, 2021
Head	2600	250 mW	EX3DV4-S N7647	D2600V2 – SN1007	14.5	58	57.30	6.43	25.72	25.90	1.2%	-0.7%	Jul. 17, 2021

10.3 Dosimetric Assessment Setup

10.3.1 Handset Test Position - Head Position

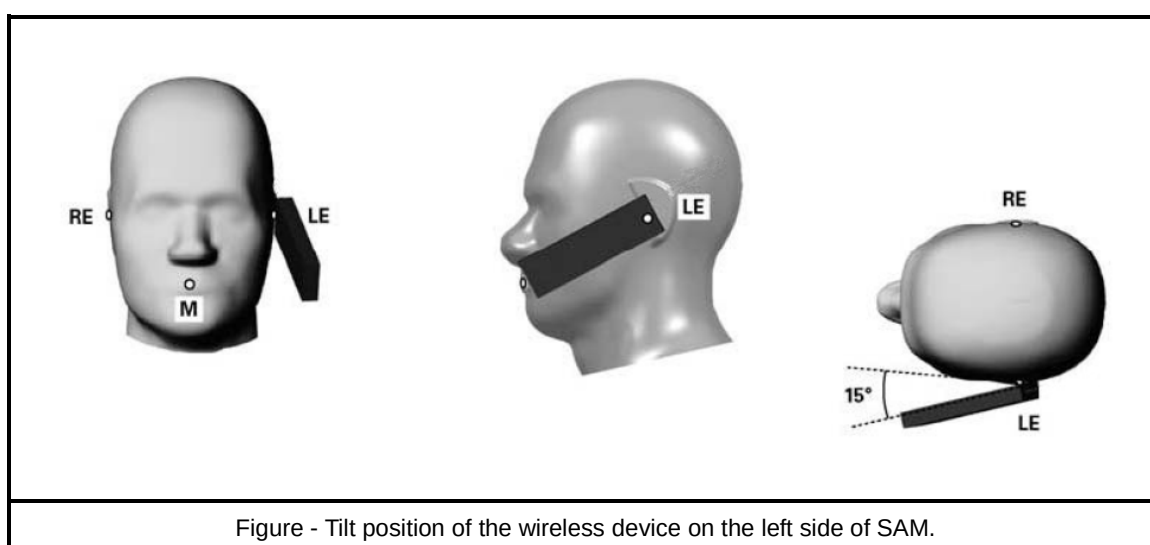
1. Specifies two handset test positions against the head phantom – the "Cheek" position and the "Tilt" position. The DUT shall be tested in both of these positions on the left and right sides of the SAM phantom. In some cases (e.g. asymmetric handsets) the DUT positioning procedures representing intended use conditions cannot be used.
2. The cheek position is established as follows:
 - (a) Configure the DUT for talk operation, if necessary. For example, for a DUT with a flip, swivel or slide cover piece, open the cover if this is consistent with talk operation. If the DUT can also be used with the cover closed, both configurations shall be tested.
 - (b) Define two imaginary lines on the DUT, the vertical centreline and the horizontal line, for the DUT in vertical orientation as shown in figure as below. The vertical centreline passes through two points on the front side of the DUT: the midpoint of the width w_t of the handset at the level of the acoustic output (Point A), and the midpoint of the width w_b at the bottom of the handset (Point B). The horizontal line is perpendicular to the vertical centreline and passes through the centre of the acoustic output. The two lines intersect at Point A.
 - (c) Position the DUT close to the surface of the phantom such that Point A is on the (virtual) extension of the line passing through Points RE (right ear) and LE (left ear) on the phantom. The plane defined by the vertical centreline and the horizontal line of the DUT shall be parallel to the sagittal plane of the phantom.
 - (d) Translate the DUT towards the phantom along the line passing through RE and LE until the handset touches the ear.
 - (e) Rotate the DUT around its vertical centreline until the plane defined by the DUT vertical centreline and horizontal line is parallel to the N-F line, and then translate the DUT towards the phantom along the LE-RE line until DUT Point A touches the ear at the ERP (ear reference point).
 - (f) While keeping Point A on the line passing through RE and LE and maintaining the DUT in contact with the pinna, rotate the handset about the line N-F until any point on the DUT is in contact with a phantom point below the pinna (cheek). The physical angles of rotation shall be documented.
 - (g) While keeping DUT Point A in contact with the ERP, rotate the handset around a line perpendicular to the plane defined by the DUT vertical centreline and horizontal line and passing through DUT Point A, until the DUT vertical centreline is in the reference plane.





3. The Tilt position is established as follows:

- Repeat Steps (a) to (g) of cheek procedure to place the DUT in the cheek position.
- While maintaining the orientation of the DUT, move the DUT away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15° .
- Rotate the DUT around the horizontal line by 15° .
- While maintaining the orientation of the DUT, move the DUT towards the phantom on a line passing through RE and LE until any part of the DUT touches the ear. The tilt position is obtained when the contact is on the pinna. If the contact is at any location other than the pinna, e.g. extended antenna on the back of the phantom head, the angle of the DUT shall be reduced. In this case, the tilt position is obtained if any part of the DUT is in contact with the pinna and a second part of the DUT is in contact with the phantom, e.g. the antenna with the back of the head.



10.3.2 Measurement Procedures

The evaluation was performed with the following procedures :

Surface Check :

A surface checks job gathers data used with optical surface detection. It determines the distance from the phantom surface where the reflection from the optical detector has its peak. Any following measurement jobs using optical surface detection will then rely on this value. The surface check performs its search a specified number of times, so that the repeatability can be verified.

Reference :

The reference job measures the field at a specified reference position, at 2 mm from the selected section's grid reference point.

Area Scan :

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a finer measurement around the hot spot. The sophisticated interpolation routines can find the maximum locations even in relatively coarse grids. When an area scan has measured all reachable points, it computes the field maxima found in the scanned area, within a range of the global maximum. Any following zoom scan within the same procedure will then perform fine scans around these maxima. The area covered the entire dimension of the EUT and the horizontal grid spacing was 15 mm × 15 mm.

Zoom Scan :

Zoom scans are used to assess the highest averaged SAR for cubic averaging volumes with 1 g and 10 g of simulated tissue. The zoom scan measures 5 x 5 x 7 points in a 32 x 32 x 30 mm cube whose base faces are centered around the maxima returned from a preceding area scan within the same procedure.

Drift :

The drift job measures the field at the same location as the most recent reference job within the same procedure, with the same settings. The drift measurement gives the field difference in dB from the last reference measurement. Several drift measurements are possible for each reference measurement. This allows monitoring of the power drift of the device in the batch process. If the value changed by more than 5 %, the evaluation was repeated.

10.4 Spatial Peak SAR Evaluation

The DASY52 software includes all numerical procedures necessary to evaluate the spatial peak SAR values. Based on the Draft: SCC-34, SC-2, WG-2 - Computational Dosimetry, IEEE P1529/D0.0 (Draft Recommended Practice for Determining the Spatial-Peak Specific Absorption Rate (SAR) Associated with the Use of Wireless Handsets - Computational Techniques), a new algorithm has been implemented. The spatial-peak SAR can be computed over any required mass.

The base for the evaluation is a "cube" measurement in a volume of (32x32x30) mm³ (5x5x7 points). The measured volume must include the 1 g 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. If the 10 g cube or both cubes are not entirely inside the measured volumes, the system issues a warning regarding the evaluated spatial peak values within the Postprocessing engine (SEMCAD). This means that if the measured volume is shifted, higher values might be possible. To get the correct values you can use a finer measurement grid for the area scan. In complicated field distributions, a large grid spacing for the area scan might miss some details and give an incorrectly interpolated peak location.

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

Interpolation and Extrapolation

The probe is calibrated at the center of the dipole sensors which is located 1 to 2.7 mm away from the probe tip. During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated.

In DASY52, the choice of the coordinate system defining the location of the measurement points has no influence on the uncertainty of the interpolation, Maxima Search and SAR extrapolation routines. The interpolation, Maxima Search and extrapolation routines are all based on the modified Quadratic Shepard's method [7].

11. Power Table

Antenna	Ant Upper		Ant Lower	
Mode	Original Power Tune up (dBm)	Power Reduce Tune up (dBm)	Original Power Tune up (dBm)	Power Reduce Tune up (dBm)
GSM/GPRS / EGPRS 900	33.50	33.50	33.50	33.50
WCDMA / HSDPA / HSUPA Band I	25.00	22.00	25.00	25.00
WCDMA / HSDPA / HSUPA Band VIII	25.50	24.00	25.50	25.50
LTE Band 1	25.50	22.50	25.50	25.50
LTE Band 3	25.50	22.50	25.50	25.50
LTE Band 7	25.50	17.50	25.50	25.50
LTE Band 8	25.50	23.50	25.50	25.50
LTE Band 28	25.50	25.50	25.50	25.50
LTE Band 38	25.50	21.00	25.50	25.50
LTE Band 41	25.50	21.00	25.50	25.50

UAT Power

Band	Test Mode	CH		Frequency (MHz)	Avg burst Conducted power (dBm)	Tune up Power (dBm)
GSM900	SIM1	Lowest	1	890.2	32.69	33.5
		Middle	62	902.4	32.68	33.5
		Highest	124	914.8	32.60	33.5
GSM900	SIM2	Lowest	1	890.2	32.58	33.5
		Middle	62	902.4	32.46	33.5
		Highest	124	914.8	32.38	33.5



Band	Test Mode	Date Rate or Sub-test	CH		Frequency (MHz)	Avg burst Conducted power (dBm)	Tune up Power (dBm)
WCDMA I	SIM1	12.2k RMC	Lowest	9612	1922.4	20.43	22
			Middle	9750	1950.0	20.44	22
			Highest	9888	1977.6	20.58	22
WCDMA I	SIM2	12.2k RMC	Lowest	9612	1922.4	20.36	22
			Middle	9750	1950.0	20.32	22
			Highest	9888	1977.6	20.41	22
WCDMA VIII	SIM1	12.2k RMC	Lowest	2737	887.4	23.34	24
			Middle	2800	900.0	23.35	24
			Highest	2863	912.6	23.32	24
WCDMA VIII	SIM2	12.2k RMC	Lowest	2737	887.4	23.21	24
			Middle	2800	900.0	23.18	24
			Highest	2863	912.6	23.19	24

LTE Band	Bandwidth	Modulation	EARFCN	Frequency	RB Configuration		Average Power (dBm)	Tune up Power (dBm)
				(MHz)	Size	Offset		
1	5MHz	QPSK	18025	1922.5	1	0	21.36	22.5
	5MHz		18025	1922.5	1	24	21.36	22.5
	5MHz		18025	1922.5	8	0	21.33	22.5
	5MHz		18025	1922.5	8	17	21.49	22.5
	5MHz		18300	1950	1	0	21.49	22.5
	5MHz		18300	1950	1	24	21.43	22.5
	5MHz		18300	1950	8	0	21.53	22.5
	5MHz		18300	1950	8	17	21.52	22.5
	5MHz		18575	1977.5	1	0	21.45	22.5
	5MHz		18575	1977.5	1	24	21.48	22.5
	5MHz		18575	1977.5	8	0	21.52	22.5
	5MHz		18575	1977.5	8	17	21.51	22.5
	20MHz	QPSK	18100	1930	1	0	21.40	22.5
	20MHz		18100	1930	1	99	21.31	22.5
	20MHz		18100	1930	18	0	21.29	22.5
	20MHz		18100	1930	18	82	21.55	22.5
	20MHz		18300	1950	1	0	21.36	22.5
	20MHz		18300	1950	1	99	21.31	22.5
	20MHz		18300	1950	18	0	21.36	22.5
	20MHz		18300	1950	18	82	21.49	22.5
	20MHz		18500	1970	1	0	21.21	22.5
	20MHz		18500	1970	1	99	21.47	22.5
	20MHz		18500	1970	18	0	21.37	22.5
	20MHz		18500	1970	18	82	21.53	22.5

LTE Band	Bandwidth	Modulation	EARFCN	Frequency	RB Configuration		Average Power (dBm)	Tune up Power (dBm)
				(MHz)	Size	Offset		
3	1.4MHz	QPSK	19207	1710.7	1	0	21.58	22.5
	1.4MHz		19207	1710.7	1	5	21.53	22.5
	1.4MHz		19207	1710.7	5	0	21.59	22.5
	1.4MHz		19207	1710.7	5	1	21.66	22.5
	1.4MHz		19575	1747.5	1	0	21.47	22.5
	1.4MHz		19575	1747.5	1	5	21.59	22.5
	1.4MHz		19575	1747.5	5	0	21.64	22.5
	1.4MHz		19575	1747.5	5	1	21.49	22.5
	1.4MHz		19943	1784.3	1	0	21.49	22.5
	1.4MHz		19943	1784.3	1	5	21.48	22.5
	1.4MHz		19943	1784.3	5	0	21.55	22.5
	1.4MHz		19943	1784.3	5	1	21.57	22.5
	5MHz	QPSK	19225	1712.5	1	0	21.44	22.5
	5MHz		19225	1712.5	1	24	21.39	22.5
	5MHz		19225	1712.5	8	0	21.46	22.5
	5MHz		19225	1712.5	8	17	21.56	22.5
	5MHz		19575	1747.5	1	0	21.40	22.5
	5MHz		19575	1747.5	1	24	21.53	22.5
	5MHz		19575	1747.5	8	0	21.59	22.5
	5MHz		19575	1747.5	8	17	21.47	22.5
	5MHz		19925	1782.5	1	0	21.45	22.5
	5MHz		19925	1782.5	1	24	21.35	22.5
	5MHz		19925	1782.5	8	0	21.53	22.5
	5MHz		19925	1782.5	8	17	21.39	22.5
	20MHz	QPSK	19300	1720	1	0	21.40	22.5
	20MHz		19300	1720	1	99	21.48	22.5
	20MHz		19300	1720	18	0	21.51	22.5
	20MHz		19300	1720	18	82	21.48	22.5
	20MHz		19575	1747.5	1	0	21.56	22.5
	20MHz		19575	1747.5	1	99	21.34	22.5
	20MHz		19575	1747.5	18	0	21.61	22.5
	20MHz		19575	1747.5	18	82	21.51	22.5
	20MHz		19850	1775	1	0	21.57	22.5
	20MHz		19850	1775	1	99	21.29	22.5
	20MHz		19850	1775	18	0	21.69	22.5
	20MHz		19850	1775	18	82	21.47	22.5

LTE Band	Bandwidth	Modulation	EARFCN	Frequency	RB Configuration		Average Power (dBm)	Tune up Power (dBm)
				(MHz)	Size	Offset		
7	5MHz	QPSK	20775	2502.5	1	0	16.71	17.5
	5MHz		20775	2502.5	1	24	16.76	17.5
	5MHz		20775	2502.5	8	0	16.86	17.5
	5MHz		20775	2502.5	8	17	16.85	17.5
	5MHz		21100	2535	1	0	16.65	17.5
	5MHz		21100	2535	1	24	16.72	17.5
	5MHz		21100	2535	8	0	16.80	17.5
	5MHz		21100	2535	8	17	16.83	17.5
	5MHz		21425	2567.5	1	0	16.63	17.5
	5MHz		21425	2567.5	1	24	16.69	17.5
	5MHz		21425	2567.5	8	0	16.81	17.5
	5MHz		21425	2567.5	8	17	16.79	17.5
	20MHz	QPSK	20850	2510	1	0	16.66	17.5
	20MHz		20850	2510	1	99	16.87	17.5
	20MHz		20850	2510	18	0	16.81	17.5
	20MHz		20850	2510	18	82	16.85	17.5
	20MHz		21100	2535	1	0	16.71	17.5
	20MHz		21100	2535	1	99	16.77	17.5
	20MHz		21100	2535	18	0	16.77	17.5
	20MHz		21100	2535	18	82	16.85	17.5
	20MHz		21350	2560	1	0	16.63	17.5
	20MHz		21350	2560	1	99	16.76	17.5
	20MHz		21350	2560	18	0	16.75	17.5
	20MHz		21350	2560	18	82	16.86	17.5

LTE Band	Bandwidth	Modulation	EARFCN	Frequency	RB Configuration		Average Power (dBm)	Tune up Power (dBm)
				(MHz)	Size	Offset		
8	1.4MHz	QPSK	21507	885.7	1	0	22.66	23.5
	1.4MHz		21507	885.7	1	5	22.59	23.5
	1.4MHz		21507	885.7	5	0	22.69	23.5
	1.4MHz		21507	885.7	5	1	22.73	23.5
	1.4MHz		21650	900	1	0	22.69	23.5
	1.4MHz		21650	900	1	5	22.48	23.5
	1.4MHz		21650	900	5	0	22.69	23.5
	1.4MHz		21650	900	5	1	22.72	23.5
	1.4MHz		21793	914.3	1	0	22.69	23.5
	1.4MHz		21793	914.3	1	5	22.57	23.5
	1.4MHz		21793	914.3	5	0	22.71	23.5
	1.4MHz		21793	914.3	5	1	22.72	23.5
	5MHz	QPSK	21525	887.5	1	0	22.45	23.5
	5MHz		21525	887.5	1	24	22.48	23.5
	5MHz		21525	887.5	8	0	22.49	23.5
	5MHz		21525	887.5	8	17	22.63	23.5
	5MHz		21650	900	1	0	22.45	23.5
	5MHz		21650	900	1	24	22.53	23.5
	5MHz		21650	900	8	0	22.71	23.5
	5MHz		21650	900	8	17	22.64	23.5
	5MHz		21775	912.5	1	0	22.46	23.5
	5MHz		21775	912.5	1	24	22.65	23.5
	5MHz		21775	912.5	8	0	22.69	23.5
	5MHz		21775	912.5	8	17	22.61	23.5
	10MHz	QPSK	21550	890	1	0	22.50	23.5
	10MHz		21550	890	1	49	22.59	23.5
	10MHz		21550	890	12	0	22.57	23.5
	10MHz		21550	890	12	38	22.62	23.5
	10MHz		21650	900	1	0	22.53	23.5
	10MHz		21650	900	1	49	22.59	23.5
	10MHz		21650	900	12	0	22.69	23.5
	10MHz		21650	900	12	38	22.78	23.5
	10MHz		21750	910	1	0	22.72	23.5
	10MHz		21750	910	1	49	22.67	23.5
	10MHz		21750	910	12	0	22.60	23.5
	10MHz		21750	910	12	38	22.66	23.5

LTE Band	Bandwidth	Modulation	EARFCN	Frequency	RB Configuration		Average Power (dBm)	Tune up Power (dBm)
				(MHz)	Size	Offset		
28	3MHz	QPSK	27225	704.5	1	0	24.23	25.5
	3MHz		27225	704.5	1	14	24.14	25.5
	3MHz		27225	704.5	4	0	24.06	25.5
	3MHz		27225	704.5	4	11	24.16	25.5
	3MHz		27435	725.5	1	0	24.31	25.5
	3MHz		27435	725.5	1	14	24.28	25.5
	3MHz		27435	725.5	4	0	24.24	25.5
	3MHz		27435	725.5	4	11	24.20	25.5
	3MHz		27645	746.5	1	0	24.11	25.5
	3MHz		27645	746.5	1	14	24.22	25.5
	3MHz		27645	746.5	4	0	24.32	25.5
	3MHz		27645	746.5	4	11	24.21	25.5
	5MHz	QPSK	27235	705.5	1	0	23.96	25.5
	5MHz		27235	705.5	1	24	24.12	25.5
	5MHz		27235	705.5	8	0	24.10	25.5
	5MHz		27235	705.5	8	17	24.09	25.5
	5MHz		27435	725.5	1	0	23.92	25.5
	5MHz		27435	725.5	1	24	24.15	25.5
	5MHz		27435	725.5	8	0	24.09	25.5
	5MHz		27435	725.5	8	17	24.24	25.5
	5MHz		27635	745.5	1	0	24.21	25.5
	5MHz		27635	745.5	1	24	24.21	25.5
	5MHz		27635	745.5	8	0	24.20	25.5
	5MHz		27635	745.5	8	17	24.29	25.5
	20MHz	QPSK	27310	713	1	0	23.82	25.5
	20MHz		27310	713	1	99	24.19	25.5
	20MHz		27310	713	18	0	24.06	25.5
	20MHz		27310	713	18	82	24.25	25.5
	20MHz		27435	725.5	1	0	23.83	25.5
	20MHz		27435	725.5	1	99	24.23	25.5
	20MHz		27435	725.5	18	0	24.09	25.5
	20MHz		27435	725.5	18	82	24.30	25.5
	20MHz		27560	738	1	0	23.89	25.5
	20MHz		27560	738	1	99	24.28	25.5
	20MHz		27560	738	18	0	24.15	25.5
	20MHz		27560	738	18	82	24.34	25.5

LTE Band	Bandwidth	Modulation	EARFCN	Frequency	RB Configuration		Average Power (dBm)	Tune up Power (dBm)
				(MHz)	Size	Offset		
38	5MHz	QPSK	37775	2572.5	1	0	19.63	21
	5MHz		37775	2572.5	1	24	19.48	21
	5MHz		37775	2572.5	8	0	19.74	21
	5MHz		37775	2572.5	8	17	19.64	21
	5MHz		38000	2595	1	0	19.45	21
	5MHz		38000	2595	1	24	19.62	21
	5MHz		38000	2595	8	0	19.73	21
	5MHz		38000	2595	8	17	19.66	21
	5MHz		38225	2617.5	1	0	19.56	21
	5MHz		38225	2617.5	1	24	19.54	21
	5MHz		38225	2617.5	8	0	19.69	21
	5MHz		38225	2617.5	8	17	19.56	21
	20MHz	QPSK	37850	2580	1	0	19.66	21
	20MHz		37850	2580	1	99	19.46	21
	20MHz		37850	2580	18	0	19.69	21
	20MHz		37850	2580	18	82	19.65	21
	20MHz		38000	2595	1	0	19.51	21
	20MHz		38000	2595	1	99	19.55	21
	20MHz		38000	2595	18	0	19.76	21
	20MHz		38000	2595	18	82	19.61	21
	20MHz		38150	2610	1	0	19.49	21
	20MHz		38150	2610	1	99	19.37	21
	20MHz		38150	2610	18	0	19.70	21
	20MHz		38150	2610	18	82	19.57	21

LTE Band	Bandwidth	Modulation	EARFCN	Frequency	RB Configuration		Average Power (dBm)	Tune up Power (dBm)
				(MHz)	Size	Offset		
41	5MHz	QPSK	40065	2537.5	1	0	19.71	21
	5MHz		40065	2537.5	1	24	19.71	21
	5MHz		40065	2537.5	8	0	19.83	21
	5MHz		40065	2537.5	8	17	19.84	21
	5MHz		40640	2595	1	0	19.71	21
	5MHz		40640	2595	1	24	19.77	21
	5MHz		40640	2595	8	0	19.84	21
	5MHz		40640	2595	8	17	19.86	21
	5MHz		41215	2652.5	1	0	19.66	21
	5MHz		41215	2652.5	1	24	19.65	21
	5MHz		41215	2652.5	8	0	19.82	21
	5MHz		41215	2652.5	8	17	19.74	21
	20MHz	QPSK	40140	2545	1	0	19.67	21
	20MHz		40140	2545	1	99	19.68	21
	20MHz		40140	2545	18	0	19.88	21
	20MHz		40140	2545	18	82	19.79	21
	20MHz		40640	2595	1	0	19.68	21
	20MHz		40640	2595	1	99	19.65	21
	20MHz		40640	2595	18	0	19.89	21
	20MHz		40640	2595	18	82	19.81	21
	20MHz		41140	2645	1	0	19.58	21
	20MHz		41140	2645	1	99	19.60	21
	20MHz		41140	2645	18	0	19.71	21
	20MHz		41140	2645	18	82	19.63	21

LAT Power

Band	Test Mode	CH		Frequency (MHz)	Avg burst Conducted power (dBm)	Tune up Power (dBm)
GSM900	SIM1	Lowest	1	890.2	32.51	33.5
		Middle	62	902.4	32.53	33.5
		Highest	124	914.8	32.30	33.5
	SIM2	Lowest	1	890.2	32.42	33.5
		Middle	62	902.4	32.46	33.5
		Highest	124	914.8	32.19	33.5

Band	Test Mode	Date Rate or Sub-test	CH		Frequency (MHz)	Avg burst Conducted power (dBm)	Tune up Power (dBm))
WCDMA I	SIM1	12.2k RMC	Lowest	9612	1922.4	24.26	25.5
			Middle	9750	1950.0	24.34	25.5
			Highest	9888	1977.6	24.48	25.5
	SIM2	12.2k RMC	Lowest	9612	1922.4	24.12	25.5
			Middle	9750	1950.0	24.16	25.5
			Highest	9888	1977.6	24.31	25.5
WCDMA VIII	SIM1	12.2k RMC	Lowest	2737	887.4	23.91	25.5
			Middle	2800	900.0	24.02	25.5
			Highest	2863	912.6	24.05	25.5
	SIM2	12.2k RMC	Lowest	2737	887.4	23.78	25.5
			Middle	2800	900.0	23.86	25.5
			Highest	2863	912.6	23.92	25.5

LTE Band	Bandwidth	Modulation	EARFCN	Frequency	RB Configuration		Average Power (dBm)	Tune up Power (dBm)
				(MHz)	Size	Offset		
1	5MHz	QPSK	18025	1922.5	1	0	23.74	25.5
	5MHz		18025	1922.5	1	24	23.71	25.5
	5MHz		18025	1922.5	8	0	23.85	25.5
	5MHz		18025	1922.5	8	17	23.83	25.5
	5MHz		18300	1950	1	0	23.75	25.5
	5MHz		18300	1950	1	24	23.73	25.5
	5MHz		18300	1950	8	0	23.84	25.5
	5MHz		18300	1950	8	17	23.83	25.5
	5MHz		18575	1977.5	1	0	23.72	25.5
	5MHz		18575	1977.5	1	24	23.77	25.5
	5MHz		18575	1977.5	8	0	23.85	25.5
	5MHz		18575	1977.5	8	17	23.86	25.5
	20MHz	QPSK	18100	1930	1	0	23.71	25.5
	20MHz		18100	1930	1	99	23.67	25.5
	20MHz		18100	1930	18	0	23.79	25.5
	20MHz		18100	1930	18	82	23.78	25.5
	20MHz		18300	1950	1	0	23.73	25.5
	20MHz		18300	1950	1	99	23.69	25.5
	20MHz		18300	1950	18	0	23.82	25.5
	20MHz		18300	1950	18	82	23.79	25.5
	20MHz		18500	1970	1	0	23.65	25.5
	20MHz		18500	1970	1	99	23.76	25.5
	20MHz		18500	1970	18	0	23.76	25.5
	20MHz		18500	1970	18	82	23.84	25.5

LTE Band	Bandwidth	Modulation	EARFCN	Frequency	RB Configuration		Average Power	Tune up Power
				(MHz)	Size	Offset		
3	1.4MHz	QPSK	19207	1710.7	1	0	23.81	25.5
	1.4MHz		19207	1710.7	1	5	23.83	25.5
	1.4MHz		19207	1710.7	5	0	23.99	25.5
	1.4MHz		19207	1710.7	5	1	24.01	25.5
	1.4MHz		19575	1747.5	1	0	23.75	25.5
	1.4MHz		19575	1747.5	1	5	23.77	25.5
	1.4MHz		19575	1747.5	5	0	23.91	25.5
	1.4MHz		19575	1747.5	5	1	23.94	25.5
	1.4MHz		19943	1784.3	1	0	23.68	25.5
	1.4MHz		19943	1784.3	1	5	23.70	25.5
	1.4MHz		19943	1784.3	5	0	23.85	25.5
	1.4MHz		19943	1784.3	5	1	23.87	25.5
	5MHz	QPSK	19225	1712.5	1	0	23.79	25.5
	5MHz		19225	1712.5	1	24	23.73	25.5
	5MHz		19225	1712.5	8	0	23.87	25.5
	5MHz		19225	1712.5	8	17	23.84	25.5
	5MHz		19575	1747.5	1	0	23.75	25.5
	5MHz		19575	1747.5	1	24	23.69	25.5
	5MHz		19575	1747.5	8	0	23.82	25.5
	5MHz		19575	1747.5	8	17	23.79	25.5
	5MHz		19925	1782.5	1	0	23.65	25.5
	5MHz		19925	1782.5	1	24	23.60	25.5
	5MHz		19925	1782.5	8	0	23.75	25.5
	5MHz		19925	1782.5	8	17	23.68	25.5
	20MHz	QPSK	19300	1720	1	0	23.77	25.5
	20MHz		19300	1720	1	99	23.59	25.5
	20MHz		19300	1720	18	0	23.83	25.5
	20MHz		19300	1720	18	82	23.73	25.5
	20MHz		19575	1747.5	1	0	23.72	25.5
	20MHz		19575	1747.5	1	99	23.55	25.5
	20MHz		19575	1747.5	18	0	23.82	25.5
	20MHz		19575	1747.5	18	82	23.67	25.5
	20MHz		19850	1775	1	0	23.65	25.5
	20MHz		19850	1775	1	99	23.45	25.5
	20MHz		19850	1775	18	0	23.80	25.5
	20MHz		19850	1775	18	82	23.58	25.5

LTE Band	Bandwidth	Modulation	EARFCN	Frequency	RB Configuration		Average Power	Tune up Power
				(MHz)	Size	Offset		
7	5MHz	QPSK	20775	2502.5	1	0	23.34	25.5
	5MHz		20775	2502.5	1	24	23.34	25.5
	5MHz		20775	2502.5	8	0	23.43	25.5
	5MHz		20775	2502.5	8	17	23.44	25.5
	5MHz		21100	2535	1	0	23.23	25.5
	5MHz		21100	2535	1	24	23.25	25.5
	5MHz		21100	2535	8	0	23.30	25.5
	5MHz		21100	2535	8	17	23.32	25.5
	5MHz		21425	2567.5	1	0	23.39	25.5
	5MHz		21425	2567.5	1	24	23.40	25.5
	5MHz		21425	2567.5	8	0	23.48	25.5
	5MHz		21425	2567.5	8	17	23.53	25.5
	20MHz	QPSK	20850	2510	1	0	23.30	25.5
	20MHz		20850	2510	1	99	23.27	25.5
	20MHz		20850	2510	18	0	23.40	25.5
	20MHz		20850	2510	18	82	23.38	25.5
	20MHz		21100	2535	1	0	23.20	25.5
	20MHz		21100	2535	1	99	23.30	25.5
	20MHz		21100	2535	18	0	23.32	25.5
	20MHz		21100	2535	18	82	23.38	25.5
	20MHz		21350	2560	1	0	23.31	25.5
	20MHz		21350	2560	1	99	23.39	25.5
	20MHz		21350	2560	18	0	23.44	25.5
	20MHz		21350	2560	18	82	23.51	25.5

LTE Band	Bandwidth	Modulation	EARFCN	Frequency	RB Configuration		Average Power (dBm)	Tune up Power (dBm)
				(MHz)	Size	Offset		
8	1.4MHz	QPSK	21507	885.7	1	0	23.64	25.5
	1.4MHz		21507	885.7	1	5	23.63	25.5
	1.4MHz		21507	885.7	5	0	23.75	25.5
	1.4MHz		21507	885.7	5	1	23.76	25.5
	1.4MHz		21650	900	1	0	23.60	25.5
	1.4MHz		21650	900	1	5	23.61	25.5
	1.4MHz		21650	900	5	0	23.74	25.5
	1.4MHz		21650	900	5	1	23.73	25.5
	1.4MHz		21793	914.3	1	0	23.84	25.5
	1.4MHz		21793	914.3	1	5	23.87	25.5
	1.4MHz		21793	914.3	5	0	23.99	25.5
	1.4MHz		21793	914.3	5	1	24.01	25.5
	5MHz	QPSK	21525	887.5	1	0	23.57	25.5
	5MHz		21525	887.5	1	24	23.59	25.5
	5MHz		21525	887.5	8	0	23.66	25.5
	5MHz		21525	887.5	8	17	23.70	25.5
	5MHz		21650	900	1	0	23.59	25.5
	5MHz		21650	900	1	24	23.53	25.5
	5MHz		21650	900	8	0	23.69	25.5
	5MHz		21650	900	8	17	23.65	25.5
	5MHz		21775	912.5	1	0	23.85	25.5
	5MHz		21775	912.5	1	24	23.82	25.5
	5MHz		21775	912.5	8	0	23.97	25.5
	5MHz		21775	912.5	8	17	23.91	25.5
	10MHz	QPSK	21550	890	1	0	23.71	25.5
	10MHz		21550	890	1	49	23.71	25.5
	10MHz		21550	890	12	0	23.75	25.5
	10MHz		21550	890	12	38	23.75	25.5
	10MHz		21650	900	1	0	23.68	25.5
	10MHz		21650	900	1	49	23.58	25.5
	10MHz		21650	900	12	0	23.80	25.5
	10MHz		21650	900	12	38	23.69	25.5
	10MHz		21750	910	1	0	23.99	25.5
	10MHz		21750	910	1	49	23.91	25.5
	10MHz		21750	910	12	0	24.03	25.5
	10MHz		21750	910	12	38	23.95	25.5

LTE Band	Bandwidth	Modulation	EARFCN	Frequency	RB Configuration		Average Power (dBm)	Tune up Power (dBm)
				(MHz)	Size	Offset		
28	3MHz	QPSK	27225	704.5	1	0	23.84	25.5
	3MHz		27225	704.5	1	14	23.87	25.5
	3MHz		27225	704.5	4	0	23.85	25.5
	3MHz		27225	704.5	4	11	23.87	25.5
	3MHz		27435	725.5	1	0	23.72	25.5
	3MHz		27435	725.5	1	14	23.73	25.5
	3MHz		27435	725.5	4	0	23.72	25.5
	3MHz		27435	725.5	4	11	23.74	25.5
	3MHz		27645	746.5	1	0	23.80	25.5
	3MHz		27645	746.5	1	14	23.83	25.5
	3MHz		27645	746.5	4	0	23.82	25.5
	3MHz		27645	746.5	4	11	23.84	25.5
	5MHz	QPSK	27235	705.5	1	0	23.68	25.5
	5MHz		27235	705.5	1	24	23.74	25.5
	5MHz		27235	705.5	8	0	23.80	25.5
	5MHz		27235	705.5	8	17	23.86	25.5
	5MHz		27435	725.5	1	0	23.58	25.5
	5MHz		27435	725.5	1	24	23.66	25.5
	5MHz		27435	725.5	8	0	23.66	25.5
	5MHz		27435	725.5	8	17	23.74	25.5
	5MHz		27635	745.5	1	0	23.68	25.5
	5MHz		27635	745.5	1	24	23.74	25.5
	5MHz		27635	745.5	8	0	23.79	25.5
	5MHz		27635	745.5	8	17	23.80	25.5
	20MHz	QPSK	27310	713	1	0	23.56	25.5
	20MHz		27310	713	1	99	23.68	25.5
	20MHz		27310	713	18	0	23.67	25.5
	20MHz		27310	713	18	82	23.77	25.5
	20MHz		27435	725.5	1	0	23.44	25.5
	20MHz		27435	725.5	1	99	23.72	25.5
	20MHz		27435	725.5	18	0	23.58	25.5
	20MHz		27435	725.5	18	82	23.84	25.5
	20MHz		27560	738	1	0	23.48	25.5
	20MHz		27560	738	1	99	23.80	25.5
	20MHz		27560	738	18	0	23.61	25.5
	20MHz		27560	738	18	82	23.88	25.5

LTE Band	Bandwidth	Modulation	EARFCN	Frequency	RB Configuration		Average Power (dBm)	Tune up Power (dBm)
				(MHz)	Size	Offset		
38	5MHz	QPSK	37775	2572.5	1	0	23.92	25.5
	5MHz		37775	2572.5	1	24	23.85	25.5
	5MHz		37775	2572.5	8	0	24.04	25.5
	5MHz		37775	2572.5	8	17	23.96	25.5
	5MHz		38000	2595	1	0	23.73	25.5
	5MHz		38000	2595	1	24	23.76	25.5
	5MHz		38000	2595	8	0	23.82	25.5
	5MHz		38000	2595	8	17	23.85	25.5
	5MHz		38225	2617.5	1	0	23.91	25.5
	5MHz		38225	2617.5	1	24	23.88	25.5
	5MHz		38225	2617.5	8	0	23.97	25.5
	5MHz		38225	2617.5	8	17	23.97	25.5
	20MHz	QPSK	37850	2580	1	0	23.87	25.5
	20MHz		37850	2580	1	99	23.66	25.5
	20MHz		37850	2580	18	0	23.96	25.5
	20MHz		37850	2580	18	82	23.76	25.5
	20MHz		38000	2595	1	0	23.65	25.5
	20MHz		38000	2595	1	99	23.72	25.5
	20MHz		38000	2595	18	0	23.78	25.5
	20MHz		38000	2595	18	82	23.84	25.5
	20MHz		38150	2610	1	0	23.75	25.5
	20MHz		38150	2610	1	99	23.77	25.5
	20MHz		38150	2610	18	0	23.90	25.5
	20MHz		38150	2610	18	82	23.92	25.5

LTE Band	Bandwidth	Modulation	EARFCN	Frequency	RB Configuration		Average Power (dBm)	Tune up Power (dBm)
				(MHz)	Size	Offset		
41	5MHz	QPSK	40065	2537.5	1	0	23.57	25.5
	5MHz		40065	2537.5	1	24	23.58	25.5
	5MHz		40065	2537.5	8	0	23.69	25.5
	5MHz		40065	2537.5	8	17	23.71	25.5
	5MHz		40640	2595	1	0	23.50	25.5
	5MHz		40640	2595	1	24	23.57	25.5
	5MHz		40640	2595	8	0	23.61	25.5
	5MHz		40640	2595	8	17	23.66	25.5
	5MHz		41215	2652.5	1	0	23.42	25.5
	5MHz		41215	2652.5	1	24	23.34	25.5
	5MHz		41215	2652.5	8	0	23.52	25.5
	5MHz		41215	2652.5	8	17	23.47	25.5
	20MHz	QPSK	40140	2545	1	0	23.57	25.5
	20MHz		40140	2545	1	99	23.58	25.5
	20MHz		40140	2545	18	0	23.70	25.5
	20MHz		40140	2545	18	82	23.74	25.5
	20MHz		40640	2595	1	0	23.47	25.5
	20MHz		40640	2595	1	99	23.46	25.5
	20MHz		40640	2595	18	0	23.69	25.5
	20MHz		40640	2595	18	82	23.64	25.5
	20MHz		41140	2645	1	0	23.38	25.5
	20MHz		41140	2645	1	99	23.24	25.5
	20MHz		41140	2645	18	0	23.51	25.5
	20MHz		41140	2645	18	82	23.40	25.5

12. **Measurement Uncertainty**

Measurement uncertainties in SAR measurements are difficult to quantify due to several variables including biological, physiological, and environmental. However, we estimate the measurement uncertainties in SAR to be less than $\pm 30\%$ [8] .

According to Std. C95.3 [9] , the overall uncertainties are difficult to assess and will vary with the type of meter and usage situation. However, accuracy's of ± 1 to 3 dB can be expected in practice, with greater uncertainties in near-field situations and at higher frequencies (shorter wavelengths), or areas where large reflecting objects are present. Under optimum measurement conditions, SAR measurement uncertainties of at least ± 2 dB can be expected.

According to CENELEC [10] , typical worst-case uncertainty of field measurements is ± 5 dB. For well-defined modulation characteristics the uncertainty can be reduced to ± 3 dB.

Decision Rule

- Uncertainty is not included.
- Uncertainty is included.

IEEE 1528-2013 & IEC 62209-1 Measurement uncertainty evaluation template for handset SAR test (300 MHz~3 GHz)								
Uncertainty component	Tol.	Prob. Dist.	Div.	C _i - 1g	C _i - 10g	u _i - 1g (± %)	u _i - 10g (± %)	v _i
Measurement system								
Probe calibration	6.1	N	1	1	1	6.1	6.1	∞
Axial isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9	∞
Hemispherical isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9	∞
Boundary effect	1.0	R	1.732	1	1	0.6	0.6	∞
Linearity	4.7	R	1.732	1	1	2.7	2.7	∞
System detection limits	0.25	R	1.732	1	1	0.1	0.1	∞
Readout electronics	0.3	N	1	1	1	0.3	0.3	∞
Response time	0.0	R	1.732	1	1	0.0	0.0	∞
Integration time	2.6	R	1.732	1	1	1.5	1.5	∞
RF Ambient Noise	3.0	R	1.732	1	1	1.7	1.7	∞
RF Ambient Reflections	3.0	R	1.732	1	1	1.7	1.7	∞
Probe Positioner	0.02	R	1.732	1	1	0.01	0.01	∞
Probe Positioning	0.4	R	1.732	1	1	0.2	0.2	∞
Max. SAR evaluation	2.0	R	1.732	1	1	1.2	1.2	∞
Test sample related								
Test sample positioning	2.9	N	1	1	1	2.9	2.9	145
Device holder uncertainty	3.6	N	1	1	1	3.6	3.6	7
SAR drift measurement	5.0	R	1.732	1	1	2.9	2.9	∞
Phantom and tissue parameters								
Phantom shell uncertainty	6.1	R	1.732	1	1	3.5	3.5	∞
Liquid Conductivity (target)	5.0	R	1.732	0.78	0.71	2.3	2.0	∞
Liquid Conductivity (measurement)	4.8	R	1.732	0.78	0.71	2.2	2.0	∞
Liquid Permittivity (target)	5.0	R	1.732	0.23	0.26	0.7	0.8	∞
Liquid Permittivity (measurement)	4.8	R	1.732	0.23	0.26	0.6	0.7	∞
Combined standard uncertainty								
-	-	RSS	-	-	-	11.2	11.2	642
Expanded uncertainty (95% confidence interval)								
-	-	k =2	-	-	-	22.4	22.3	-

IEEE 1528-2013 & IEC 62209-1 Measurement uncertainty evaluation template for SAR test (3 GHz~6 GHz)								
Uncertainty component	Tol.	Prob. Dist.	Div.	C _i - 1g	C _i - 10g	u _i - 1g (± %)	u _i - 10g (± %)	v _i
Measurement system								
Probe calibration	6.7	N	1	1	1	6.7	6.7	∞
Axial isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9	∞
Hemispherical isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9	∞
Boundary effect	2.0	R	1.732	1	1	1.2	1.2	∞
Linearity	4.7	R	1.732	1	1	2.7	2.7	∞
System detection limits	0.25	R	1.732	1	1	0.1	0.1	∞
Readout electronics	0.3	N	1	1	1	0.3	0.3	∞
Response time	0.0	R	1.732	1	1	0.0	0.0	∞
Integration time	2.6	R	1.732	1	1	1.5	1.5	∞
RF Ambient Noise	3.0	R	1.732	1	1	1.7	1.7	∞
RF Ambient Reflections	3.0	R	1.732	1	1	1.7	1.7	∞
Probe Positioner	0.04	R	1.732	1	1	0.02	0.02	∞
Probe Positioning	0.8	R	1.732	1	1	0.5	0.5	∞
Max. SAR evaluation	4.0	R	1.732	1	1	2.3	2.3	∞
Test sample related								
Test sample positioning	2.9	N	1	1	1	2.9	2.9	145
Device holder uncertainty	3.6	N	1	1	1	3.6	3.6	7
SAR drift measurement	5.0	R	1.732	1	1	2.9	2.9	∞
Phantom and tissue parameters								
Phantom shell uncertainty	6.6	R	1.732	1	1	3.8	3.8	∞
Liquid Conductivity (target)	5.0	R	1.732	0.78	0.71	2.3	2.0	∞
Liquid Conductivity (measurement)	4.8	R	1.732	0.78	0.71	2.2	2.0	∞
Liquid Permittivity (target)	5.0	R	1.732	0.23	0.26	0.7	0.8	∞
Liquid Permittivity (measurement)	4.8	R	1.732	0.23	0.26	0.6	0.7	∞
Combined standard uncertainty								
-	-	RSS	-	-	-	11.9	11.8	804
Expanded uncertainty (95% confidence interval)								
-	-	k =2	-	-	-	23.7	23.6	-

13. SAR Test Results Summary

13.1 Test Results

PGSM 900 MHz SAR Test Results - Head									
Frequency		Test Mode	Test Position	Spacing (mm)	SAR _{10 g} (W/kg)	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR _{10 g}	Note
Ch.	MHz								
62	902.4	Voice	Right-Cheek	0	0.472	32.68	33.5	0.570	Ant Upper
1	890.2	Voice	Right-Cheek	0	0.491	32.69	33.5	0.592	Ant Upper
124	914.8	Voice	Right-Cheek	0	0.479	32.6	33.5	0.589	Ant Upper
62	902.4	Voice	Right-Tilted	0	0.36	32.68	33.5	0.435	Ant Upper
62	902.4	Voice	Left-Cheek	0	0.31	32.68	33.5	0.374	Ant Upper
62	902.4	Voice	Left-Tilted	0	0.256	32.68	33.5	0.309	Ant Upper
62	902.4	Voice	Right-Cheek	0	0.144	32.53	33.5	0.180	Ant Lower
1	890.2	Voice	Right-Cheek	0	0.125	32.51	33.5	0.157	Ant Lower
124	914.8	Voice	Right-Cheek	0	0.179	32.3	33.5	0.236	Ant Lower
62	902.4	Voice	Right-Tilted	0	0.053	32.53	33.5	0.066	Ant Lower
62	902.4	Voice	Left-Cheek	0	0.12	32.53	33.5	0.150	Ant Lower
62	902.4	Voice	Left-Tilted	0	0.057	32.53	33.5	0.071	Ant Lower
Safety Limit / Spatial Peak European Council Recommendation 1999 519 EC NCC CNS14959					Head 2.0 W/kg Averaged over 10 gram				

WCDMA Band 1 SAR Test Results - Head									
Frequency		Modulation or Sub-Test	Test Position	Spacing (mm)	SAR _{10 g} (W/kg)	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR _{10 g}	Note
Ch.	MHz								
9750	1950	RMC12.2K	Right-Cheek	0	0.376	20.44	22	0.539	Ant Upper
9612	1922.4	RMC12.2K	Right-Cheek	0	0.39	20.43	22	0.560	Ant Upper
9888	1977.6	RMC12.2K	Right-Cheek	0	0.407	20.58	22	0.564	Ant Upper
9750	1950	RMC12.2K	Right-Tilted	0	0.365	20.44	22	0.523	Ant Upper
9750	1950	RMC12.2K	Left-Cheek	0	0.367	20.44	22	0.526	Ant Upper
9750	1950	RMC12.2K	Left-Tilted	0	0.332	20.44	22	0.475	Ant Upper
9750	1950	RMC12.2K	Right-Cheek	0	0.036	24.34	25	0.042	Ant Lower
9612	1922.4	RMC12.2K	Right-Cheek	0	0.051	24.26	25	0.060	Ant Lower
9888	1977.6	RMC12.2K	Right-Cheek	0	0.031	24.48	25	0.035	Ant Lower
9750	1950	RMC12.2K	Right-Tilted	0	0.021	24.34	25	0.024	Ant Lower
9750	1950	RMC12.2K	Left-Cheek	0	0.033	24.34	25	0.038	Ant Lower
9750	1950	RMC12.2K	Left-Tilted	0	0.027	24.34	25	0.031	Ant Lower
Safety Limit / Spatial Peak European Council Recommendation 1999 519 EC NCC CNS14959					Head 2.0 W/kg Averaged over 10 gram				

WCDMA Band 8 SAR Test Results - Head									
Frequency		Modulation or Sub-Test	Test Position	Spacing (mm)	SAR _{10g} (W/kg)	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR _{10g}	Note
Ch.	MHz								
2800	900	RMC12.2K	Right-Cheek	0	0.364	23.35	24	0.423	Ant Upper
2800	900	RMC12.2K	Right-Tilted	0	0.466	23.35	24	0.541	Ant Upper
2737	887.4	RMC12.2K	Right-Tilted	0	0.401	23.34	24	0.467	Ant Upper
2863	912.6	RMC12.2K	Right-Tilted	0	0.419	23.32	24	0.490	Ant Upper
2800	900	RMC12.2K	Left-Cheek	0	0.149	23.35	24	0.173	Ant Upper
2800	900	RMC12.2K	Left-Tilted	0	0.126	23.35	24	0.146	Ant Upper
2800	900	RMC12.2K	Right-Cheek	0	0.178	24.02	25	0.223	Ant Lower
2800	900	RMC12.2K	Right-Tilted	0	0.091	24.02	25	0.114	Ant Lower
2800	900	RMC12.2K	Left-Cheek	0	0.207	24.02	25	0.259	Ant Lower
2737	887.4	RMC12.2K	Left-Cheek	0	0.266	23.91	25	0.342	Ant Lower
2863	912.6	RMC12.2K	Left-Cheek	0	0.159	24.05	25	0.198	Ant Lower
2800	900	RMC12.2K	Left-Tilted	0	0.089	24.02	25	0.111	Ant Lower
Safety Limit / Spatial Peak European Council Recommendation 1999 519 EC NCC CNS14959					Head 2.0 W/kg Averaged over 10 gram				

LTE Band 1 SAR Test Results - Head												
Frequency		Bandwidth (MHz)	Modulation	RB Size	RB Offset	Test Position	Spacing (mm)	SAR _{10g} (W/kg)	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR _{10g}	Note
Ch.	MHz											
18300	1950	20M	QPSK	18	82	Right-Cheek	0	0.424	21.49	22.5	0.535	Ant Upper
18300	1950	20M	QPSK	18	82	Right-Tilted	0	0.441	21.49	22.5	0.556	Ant Upper
18100	1930	20M	QPSK	18	82	Right-Tilted	0	0.471	21.55	22.5	0.586	Ant Upper
18500	1970	20M	QPSK	18	82	Right-Tilted	0	0.454	21.53	22.5	0.568	Ant Upper
18300	1950	20M	QPSK	18	82	Left-Cheek	0	0.312	21.49	22.5	0.394	Ant Upper
18300	1950	20M	QPSK	18	82	Left-Tilted	0	0.353	21.49	22.5	0.445	Ant Upper
18300	1950	5M	QPSK	8	17	Right-Cheek	0	0.089	23.83	25.5	0.131	Ant Lower
18025	1922.5	5M	QPSK	8	17	Right-Cheek	0	0.127	23.83	25.5	0.187	Ant Lower
18575	1977.5	5M	QPSK	8	17	Right-Cheek	0	0.072	23.86	25.5	0.105	Ant Lower
18300	1950	5M	QPSK	8	17	Right-Tilted	0	0.046	23.83	25.5	0.068	Ant Lower
18300	1950	5M	QPSK	8	17	Left-Cheek	0	0.086	23.83	25.5	0.126	Ant Lower
18300	1950	5M	QPSK	8	17	Left-Tilted	0	0.064	23.83	25.5	0.094	Ant Lower
Safety Limit / Spatial Peak European Council Recommendation 1999 519 EC NCC CNS14959							Head 2.0 W/kg Averaged over 10 gram					

LTE Band 3 SAR Test Results - Head												
Frequency		Bandwidth (MHz)	Modulation	RB Size	RB Offset	Test Position	Spacing (mm)	SAR _{10 g} (W/kg)	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR _{10 g}	Note
Ch.	MHz											
19575	1747.5	20M	QPSK	18	0	Right-Cheek	0	0.393	21.61	22.5	0.482	Ant Upper
19300	1720	20M	QPSK	18	0	Right-Cheek	0	0.388	21.51	22.5	0.487	Ant Upper
19850	1775	20M	QPSK	18	0	Right-Cheek	0	0.41	21.69	22.5	0.494	Ant Upper
19575	1747.5	20M	QPSK	18	0	Right-Tilted	0	0.37	21.61	22.5	0.454	Ant Upper
19575	1747.5	20M	QPSK	18	0	Left-Cheek	0	0.356	21.61	22.5	0.437	Ant Upper
19575	1747.5	20M	QPSK	18	0	Left-Tilted	0	0.345	21.61	22.5	0.423	Ant Upper
19575	1747.5	1.4M	QPSK	5	1	Right-Cheek	0	0.101	23.94	25.5	0.145	Ant Lower
19207	1710.7	1.4M	QPSK	5	1	Right-Cheek	0	0.075	24.01	25.5	0.106	Ant Lower
19943	1784.3	1.4M	QPSK	5	1	Right-Cheek	0	0.114	23.87	25.5	0.166	Ant Lower
19575	1747.5	1.4M	QPSK	5	1	Right-Tilted	0	0.04	23.94	25.5	0.057	Ant Lower
19575	1747.5	1.4M	QPSK	5	1	Left-Cheek	0	0.075	23.94	25.5	0.107	Ant Lower
19575	1747.5	1.4M	QPSK	5	1	Left-Tilted	0	0.052	23.94	25.5	0.074	Ant Lower
Safety Limit / Spatial Peak European Council Recommendation 1999 519 EC NCC CNS14959							Head 2.0 W/kg Averaged over 10 gram					

LTE Band 7 SAR Test Results - Head												
Frequency		Bandwidth (MHz)	Modulation	RB Size	RB Offset	Test Position	Spacing (mm)	SAR _{10 g} (W/kg)	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR _{10 g}	Note
Ch.	MHz											
21100	2535	20M	QPSK	1	99	Right-Cheek	0	0.212	16.77	17.5	0.251	Ant Upper
21100	2535	20M	QPSK	1	99	Right-Tilted	0	0.328	16.77	17.5	0.388	Ant Upper
20850	2510	20M	QPSK	1	99	Right-Tilted	0	0.342	16.87	17.5	0.395	Ant Upper
21350	2560	20M	QPSK	1	99	Right-Tilted	0	0.284	16.76	17.5	0.337	Ant Upper
21100	2535	20M	QPSK	1	99	Left-Cheek	0	0.108	16.77	17.5	0.128	Ant Upper
21100	2535	20M	QPSK	1	99	Left-Tilted	0	0.153	16.77	17.5	0.181	Ant Upper
21100	2535	5M	QPSK	8	17	Right-Cheek	0	0.103	23.32	25.5	0.170	Ant Lower
21100	2535	5M	QPSK	8	17	Right-Tilted	0	0.09	23.32	25.5	0.149	Ant Lower
21100	2535	5M	QPSK	8	17	Left-Cheek	0	0.142	23.32	25.5	0.235	Ant Lower
20775	2502.5	5M	QPSK	8	17	Left-Cheek	0	0.176	23.44	25.5	0.283	Ant Lower
21425	2567.5	5M	QPSK	8	17	Left-Cheek	0	0.169	23.53	25.5	0.266	Ant Lower
21100	2535	5M	QPSK	8	17	Left-Tilted	0	0.125	23.32	25.5	0.206	Ant Lower
Safety Limit / Spatial Peak European Council Recommendation 1999 519 EC NCC CNS14959							Head 2.0 W/kg Averaged over 10 gram					

LTE Band 8 SAR Test Results - Head												
Frequency		Bandwidth (MHz)	Modulation	RB Size	RB Offset	Test Position	Spacing (mm)	SAR _{10 g} (W/kg)	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR _{10 g}	Note
Ch.	MHz											
21650	900	10M	QPSK	12	38	Right-Cheek	0	0.406	22.78	23.5	0.479	Ant Upper
21550	890	10M	QPSK	12	38	Right-Cheek	0	0.377	22.62	23.5	0.462	Ant Upper
21750	910	10M	QPSK	12	38	Right-Cheek	0	0.387	22.66	23.5	0.470	Ant Upper
21650	900	10M	QPSK	12	38	Right-Tilted	0	0.339	22.78	23.5	0.400	Ant Upper
21650	900	10M	QPSK	12	38	Left-Cheek	0	0.262	22.78	23.5	0.309	Ant Upper
21650	900	10M	QPSK	12	38	Left-Tilted	0	0.196	22.78	23.5	0.231	Ant Upper
21650	900	10M	QPSK	12	0	Right-Cheek	0	0.174	23.8	25.5	0.257	Ant Lower
21650	900	10M	QPSK	12	0	Right-Tilted	0	0.109	23.8	25.5	0.161	Ant Lower
21650	900	10M	QPSK	12	0	Left-Cheek	0	0.199	23.8	25.5	0.294	Ant Lower
21550	890	10M	QPSK	12	0	Left-Cheek	0	0.291	23.75	25.5	0.435	Ant Lower
21750	910	10M	QPSK	12	0	Left-Cheek	0	0.173	24.03	25.5	0.243	Ant Lower
21650	900	10M	QPSK	12	0	Left-Tilted	0	0.113	23.8	25.5	0.167	Ant Lower
Safety Limit / Spatial Peak European Council Recommendation 1999 519 EC NCC CNS14959							Head 2.0 W/kg Averaged over 10 gram					

LTE Band 28 SAR Test Results - Head												
Frequency		Bandwidth (MHz)	Modulation	RB Size	RB Offset	Test Position	Spacing (mm)	SAR _{10 g} (W/kg)	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR _{10 g}	Note
Ch.	MHz											
27435	725.5	20M	QPSK	18	82	Right-Cheek	0	0.348	24.3	25.5	0.459	Ant Upper
27310	713	20M	QPSK	18	82	Right-Cheek	0	0.343	24.25	25.5	0.457	Ant Upper
27560	738	20M	QPSK	18	82	Right-Cheek	0	0.365	24.34	25.5	0.477	Ant Upper
27435	725.5	20M	QPSK	18	82	Right-Tilted	0	0.302	24.3	25.5	0.398	Ant Upper
27435	725.5	20M	QPSK	18	82	Left-Cheek	0	0.193	24.3	25.5	0.254	Ant Upper
27435	725.5	20M	QPSK	18	82	Left-Tilted	0	0.162	24.3	25.5	0.214	Ant Upper
27435	725.5	20M	QPSK	18	82	Right-Cheek	0	0.156	23.84	25.5	0.229	Ant Lower
27435	725.5	20M	QPSK	18	82	Right-Tilted	0	0.081	23.84	25.5	0.119	Ant Lower
27435	725.5	20M	QPSK	18	82	Left-Cheek	0	0.153	23.84	25.5	0.224	Ant Lower
27310	713	20M	QPSK	18	82	Left-Cheek	0	0.195	23.77	25.5	0.290	Ant Lower
27560	738	20M	QPSK	18	82	Left-Cheek	0	0.147	23.88	25.5	0.213	Ant Lower
27435	725.5	20M	QPSK	18	82	Left-Tilted	0	0.077	23.84	25.5	0.113	Ant Lower
Safety Limit / Spatial Peak European Council Recommendation 1999 519 EC NCC CNS14959							Head 2.0 W/kg Averaged over 10 gram					

LTE Band 38 SAR Test Results - Head												
Frequency		Bandwidth (MHz)	Modulation	RB Size	RB Offset	Test Position	Spacing (mm)	SAR _{10 g} (W/kg)	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR _{10 g}	Note
Ch.	MHz											
38000	2595	20M	QPSK	18	0	Right-Cheek	0	0.374	19.76	21	0.498	Ant Upper
38000	2595	20M	QPSK	18	0	Right-Tilted	0	0.412	19.76	21	0.548	Ant Upper
37850	2580	20M	QPSK	18	0	Right-Tilted	0	0.4	19.69	21	0.541	Ant Upper
38150	2610	20M	QPSK	18	0	Right-Tilted	0	0.399	19.7	21	0.538	Ant Upper
38000	2595	20M	QPSK	18	0	Left-Cheek	0	0.134	19.76	21	0.178	Ant Upper
38000	2595	20M	QPSK	18	0	Left-Tilted	0	0.176	19.76	21	0.234	Ant Upper
38000	2595	5M	QPSK	8	0	Right-Cheek	0	0.071	23.82	25.5	0.105	Ant Lower
38000	2595	5M	QPSK	8	0	Right-Tilted	0	0.048	23.82	25.5	0.071	Ant Lower
38000	2595	5M	QPSK	8	0	Left-Cheek	0	0.082	23.82	25.5	0.121	Ant Lower
37775	2572.5	5M	QPSK	8	0	Left-Cheek	0	0.107	24.04	25.5	0.150	Ant Lower
38225	2617.5	5M	QPSK	8	0	Left-Cheek	0	0.087	23.97	25.5	0.124	Ant Lower
38000	2595	5M	QPSK	8	0	Left-Tilted	0	0.08	23.82	25.5	0.118	Ant Lower
Safety Limit / Spatial Peak European Council Recommendation 1999 519 EC NCC CNS14959							Head 2.0 W/kg Averaged over 10 gram					

LTE Band 41 SAR Test Results - Head												
Frequency		Bandwidth (MHz)	Modulation	RB Size	RB Offset	Test Position	Spacing (mm)	SAR _{10 g} (W/kg)	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR _{10 g}	Note
Ch.	MHz											
40640	2595	20M	QPSK	18	0	Right-Cheek	0	0.291	19.89	21	0.376	Ant Upper
40640	2595	20M	QPSK	18	0	Right-Tilted	0	0.363	19.89	21	0.469	Ant Upper
40140	2545	20M	QPSK	18	0	Right-Tilted	0	0.357	19.88	21	0.462	Ant Upper
41140	2645	20M	QPSK	18	0	Right-Tilted	0	0.34	19.71	21	0.458	Ant Upper
40640	2595	20M	QPSK	18	0	Left-Cheek	0	0.107	19.89	21	0.138	Ant Upper
40640	2595	20M	QPSK	18	0	Left-Tilted	0	0.14	19.89	21	0.181	Ant Upper
40640	2595	20M	QPSK	18	82	Right-Cheek	0	0.069	23.64	25.5	0.106	Ant Lower
40640	2595	20M	QPSK	18	82	Right-Tilted	0	0.048	23.64	25.5	0.074	Ant Lower
40640	2595	20M	QPSK	18	82	Left-Cheek	0	0.081	23.64	25.5	0.124	Ant Lower
40140	2545	20M	QPSK	18	82	Left-Cheek	0	0.104	23.74	25.5	0.156	Ant Lower
41140	2645	20M	QPSK	18	82	Left-Cheek	0	0.074	23.4	25.5	0.120	Ant Lower
40640	2595	20M	QPSK	18	82	Left-Tilted	0	0.08	23.64	25.5	0.123	Ant Lower
Safety Limit / Spatial Peak European Council Recommendation 1999 519 EC NCC CNS14959							Head 2.0 W/kg Averaged over 10 gram					

13.2 European Council Recommendation 1999 519 EC

Depending on frequency, the following physical quantities (dosimetric / exposimetric quantities) are used to specify the basic restrictions on electromagnetic fields :

- * between 0 and 1 Hz basic restrictions are provided for magnetic flux density for static magnetic fields (0 Hz) and current density for time-varying fields up to 1 Hz, in order to prevent effects on the cardiovascular and central nervous system,
- * between 1Hz and 10 MHz basic restrictions are provided for current density to prevent effects on nervous system functions,
- * Between 100 kHz and 10 GHz basic restrictions on SAR are provided to prevent whole-body heat stress and excessive localized heating of tissues. In the range 100 kHz to 10 MHz, restrictions on both current density and SAR are provided,
- * Between 10 GHz and 300 GHz basic restrictions on power density are provided to prevent heating in tissue at or near the body surface.

Frequency Range	Magnetic flux density (mT)	Current density (mA/m ²) (rms)	Whole body average SAR (W/kg)	Localized SAR (head and trunk) (W/kg)	Localized SAR (limbs) (W/kg)	Power density, S (W/m ²)
0	40	-----	-----	-----	-----	-----
> 0 - 1 Hz	-----	8	-----	-----	-----	-----
1 - 4 Hz	-----	8/f	-----	-----	-----	-----
4 - 1000 Hz	-----	2	-----	-----	-----	-----
1000 Hz -100 kHz	-----	f/500	-----	-----	-----	-----
100 kHz - 10 MHz	-----	f/500	0.08	2	4	-----
10 MHz - 10 GHz	-----	-----	0.08	2	4	-----
10 - 300 GHz	-----	-----	-----	-----	-----	10
Table 5. Reference levels for electric, magnetic and electromagnetic fields (0Hz to 300GHz, unperturbed RMS values)						

14. Conclusion

The SAR test values found for the portable mobile phone are below the maximum recommended level of 2.0 W/kg (W/kg).

15. References

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- [7] Robert J. Renka, "*Multivariate Interpolation Of Large Sets Of Scattered Data*", University of North Texas ACM Transactions on Mathematical Software, vol. 14, no. 2, June 1988 , pp. 139-148.
- [8] N. Kuster, R. Kastle, T. Schmid, "*Dosimetric evaluation of mobile communications equipment with known precision*", IEEE Transaction on Communications, vol. E80-B, no. 5, May 1997, pp. 645-652.
- [9] Std. C95.3-1991, "*IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields – RF and Microwave*", New York: IEEE, Aug. 1992.
- [10] CENELEC CLC/SC111B, European Prestandard (prENV 50166-2), *Human Exposure to Electromagnetic Fields High-frequency: 10 KHz-300GHz*, Jan. 1995.

Appendix A - System Performance Check

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/16

System Performance Check at 750MHz_Head

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1004

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

Medium parameters used: $f = 750$ MHz; $\sigma = 0.896$ S/m; $\epsilon_r = 42.568$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(10.03, 10.03, 10.03) @ 750 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

System Performance Check at 750MHz/Area Scan (61x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 2.74 W/kg

System Performance Check at 750MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 58.59 V/m; Power Drift = -0.17 dB

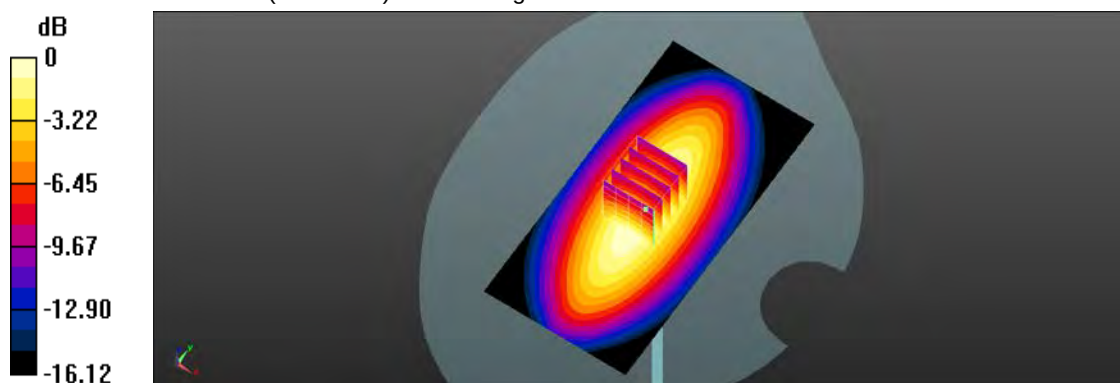
Peak SAR (extrapolated) = 3.07 W/kg

SAR(1 g) = 2.02 W/kg; SAR(10 g) = 1.33 W/kg

Smallest distance from peaks to all points 3 dB below = 16.3 mm

Ratio of SAR at M2 to SAR at M1 = 65.7%

Maximum value of SAR (measured) = 2.71 W/kg



0 dB = 2.71 W/kg = 4.33 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/16

System Performance Check at 900MHz_Head

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:073

Communication System: UID 0, CW (0); Frequency: 900 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 900$ MHz; $\sigma = 0.968$ S/m; $\epsilon_r = 41.549$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(9.67, 9.67, 9.67) @ 900 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

System Performance Check at 900MHz/Area Scan (61x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 3.48 W/kg

System Performance Check at 900MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 61.57 V/m; Power Drift = 0.01 dB

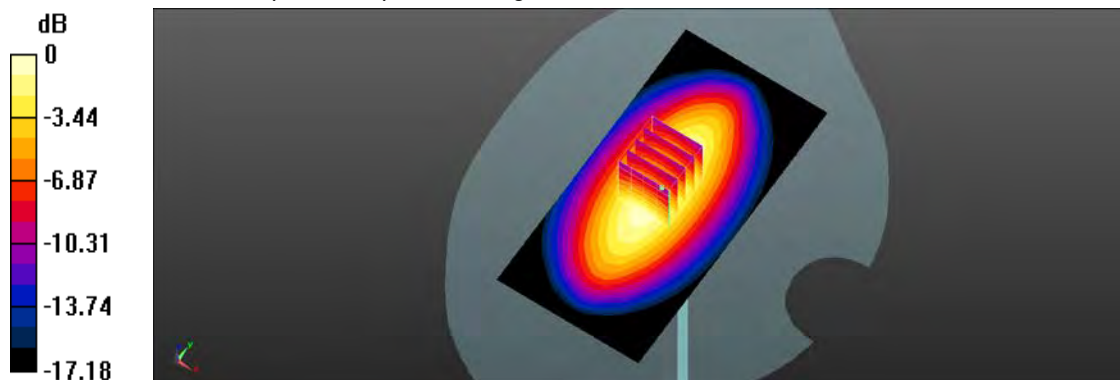
Peak SAR (extrapolated) = 3.95 W/kg

SAR(1 g) = 2.59 W/kg; SAR(10 g) = 1.68 W/kg

Smallest distance from peaks to all points 3 dB below = 16 mm

Ratio of SAR at M2 to SAR at M1 = 65.4%

Maximum value of SAR (measured) = 3.50 W/kg



0 dB = 3.50 W/kg = 5.44 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/15

System Performance Check at 1800MHz_Head

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:265

Communication System: UID 0, CW (0); Frequency: 1800 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 1800$ MHz; $\sigma = 1.399$ S/m; $\epsilon_r = 38.938$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(8.88, 8.88, 8.88) @ 1800 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

System Performance Check at 1800MHz/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 16.4 W/kg

System Performance Check at 1800MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 109.2 V/m; Power Drift = -0.04 dB

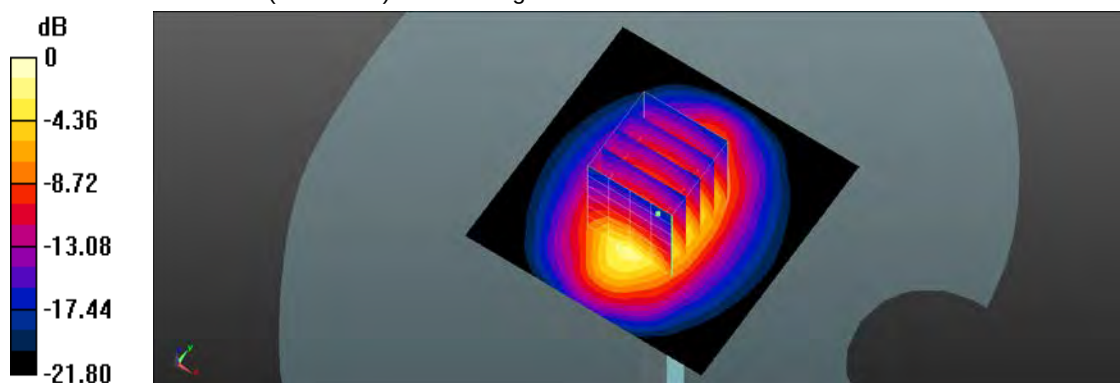
Peak SAR (extrapolated) = 19.5 W/kg

SAR(1 g) = 9.93 W/kg; SAR(10 g) = 5.06 W/kg

Smallest distance from peaks to all points 3 dB below = 9.6 mm

Ratio of SAR at M2 to SAR at M1 = 50.8%

Maximum value of SAR (measured) = 16.0 W/kg



0 dB = 16.0 W/kg = 12.04 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/15

System Performance Check at 1950MHz_Head

DUT: Dipole 1950 MHz; Type: D1950V3; Serial: D1950V3 - SN:1117

Communication System: UID 0, CW (0); Frequency: 1950 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 1950$ MHz; $\sigma = 1.379$ S/m; $\epsilon_r = 41.009$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(8.41, 8.41, 8.41) @ 1950 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

System Performance Check at 1950MHz/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 14.3 W/kg

System Performance Check at 1950MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 102.2 V/m; Power Drift = 0.05 dB

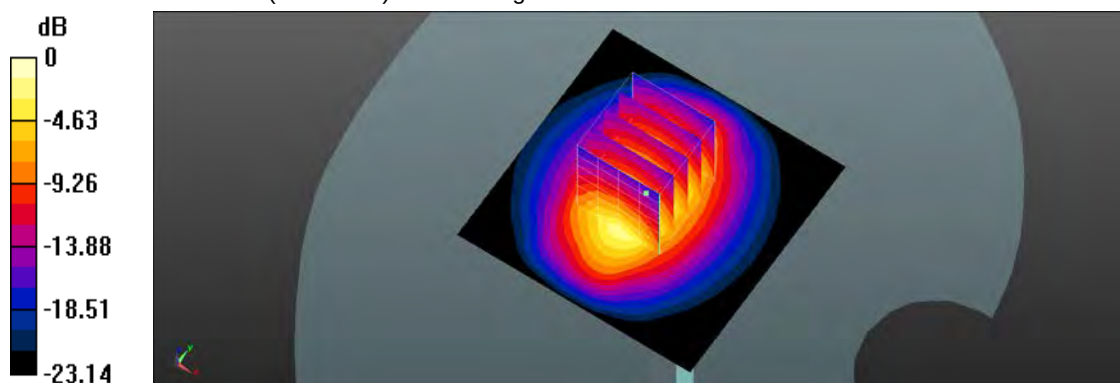
Peak SAR (extrapolated) = 17.2 W/kg

SAR(1 g) = 9.33 W/kg; SAR(10 g) = 4.84 W/kg

Smallest distance from peaks to all points 3 dB below = 9.6 mm

Ratio of SAR at M2 to SAR at M1 = 54.3%

Maximum value of SAR (measured) = 14.6 W/kg



0 dB = 14.6 W/kg = 11.64 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/17

System Performance Check at 2600MHz_Head

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1007

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

Medium parameters used: $f = 2600$ MHz; $\sigma = 2.019$ S/m; $\epsilon_r = 39.271$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(8, 8, 8) @ 2600 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

System Performance Check at 2600MHz/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 25.6 W/kg

System Performance Check at 2600MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 114.5 V/m; Power Drift = -0.03 dB

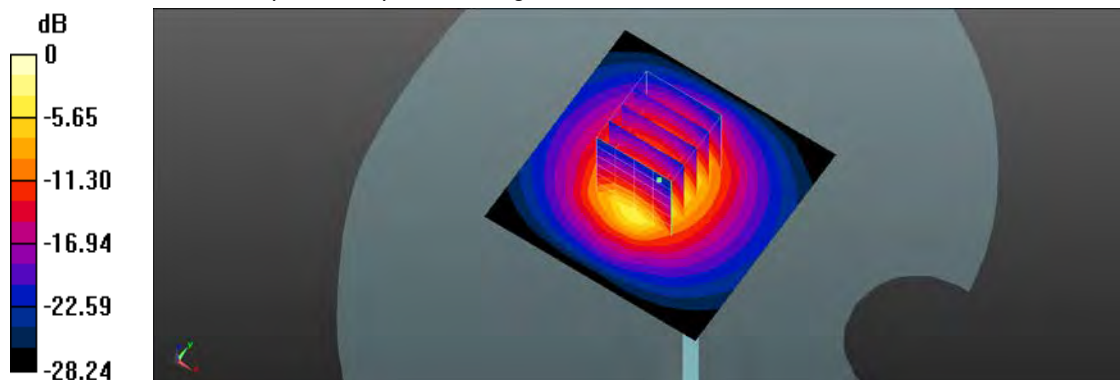
Peak SAR (extrapolated) = 32.1 W/kg

SAR(1 g) = 14.5 W/kg; SAR(10 g) = 6.43 W/kg

Smallest distance from peaks to all points 3 dB below = 9 mm

Ratio of SAR at M2 to SAR at M1 = 45.2%

Maximum value of SAR (measured) = 25.2 W/kg



0 dB = 25.6 W/kg = 14.08 dBW/kg

Appendix B - SAR Measurement Data

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/16

110_GSM900 CH 1_Right-Cheek_Ant Upper

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, GSM900 (0); Frequency: 890.2 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated): $f = 890.2$ MHz; $\sigma = 0.958$ S/m; $\epsilon_r = 41.66$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(9.67, 9.67, 9.67) @ 890.2 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.78 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 39.01 V/m; Power Drift = -0.10 dB

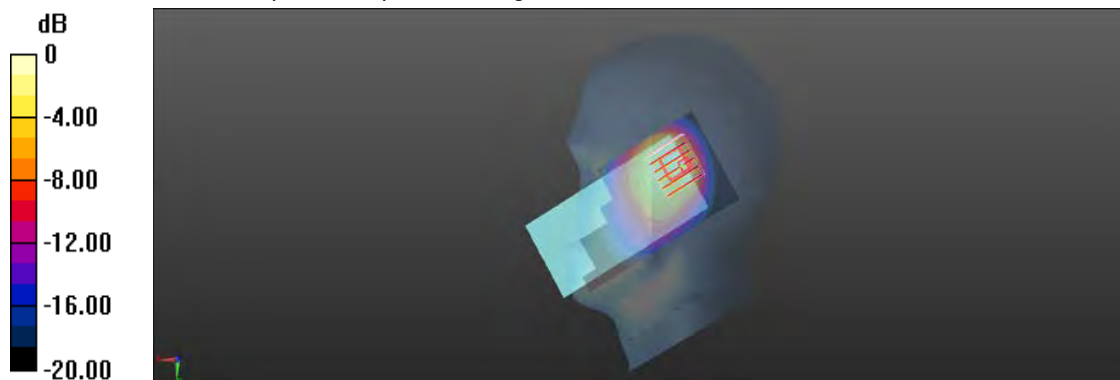
Peak SAR (extrapolated) = 2.01 W/kg

SAR(1 g) = 0.829 W/kg; SAR(10 g) = 0.491 W/kg

Smallest distance from peaks to all points 3 dB below = 6.4 mm

Ratio of SAR at M2 to SAR at M1 = 40.5%

Maximum value of SAR (measured) = 1.41 W/kg



0 dB = 1.41 W/kg = 1.49 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/16

259_GSM900 CH 124_Right-Cheek_Ant Lower

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, GSM900 (0); Frequency: 914.8 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 915$ MHz; $\sigma = 0.983$ S/m; $\epsilon_r = 41.377$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(9.67, 9.67, 9.67) @ 914.8 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.294 W/kg

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

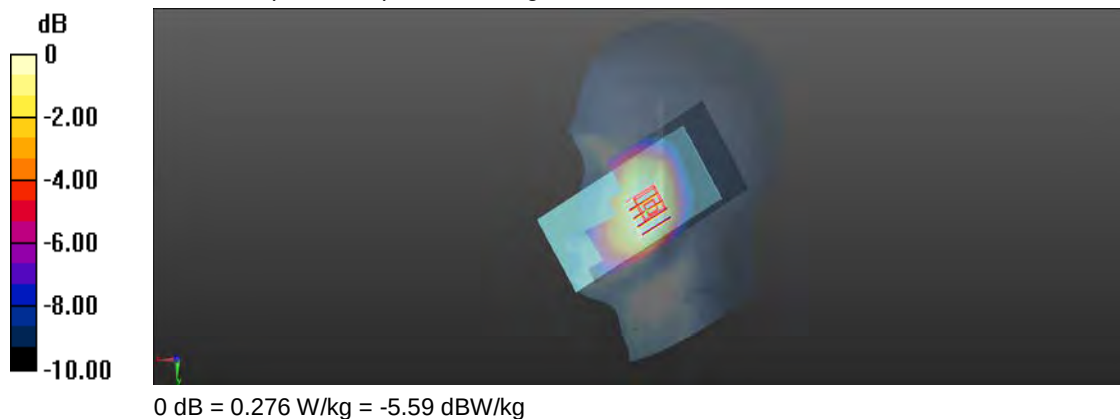
Reference Value = 17.49 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.300 W/kg

SAR(1 g) = 0.233 W/kg; SAR(10 g) = 0.179 W/kg

Ratio of SAR at M2 to SAR at M1 = 76.7%

Maximum value of SAR (measured) = 0.276 W/kg



Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/15

106_WCDMA Band I CH 9888_Right-Cheek_Ant Upper

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, WCDMA Band I (0); Frequency: 1977.6 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 1978$ MHz; $\sigma = 1.399$ S/m; $\epsilon_r = 41.009$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(8.41, 8.41, 8.41) @ 1977.6 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.33 W/kg

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

Reference Value = 31.82 V/m; Power Drift = -0.03 dB

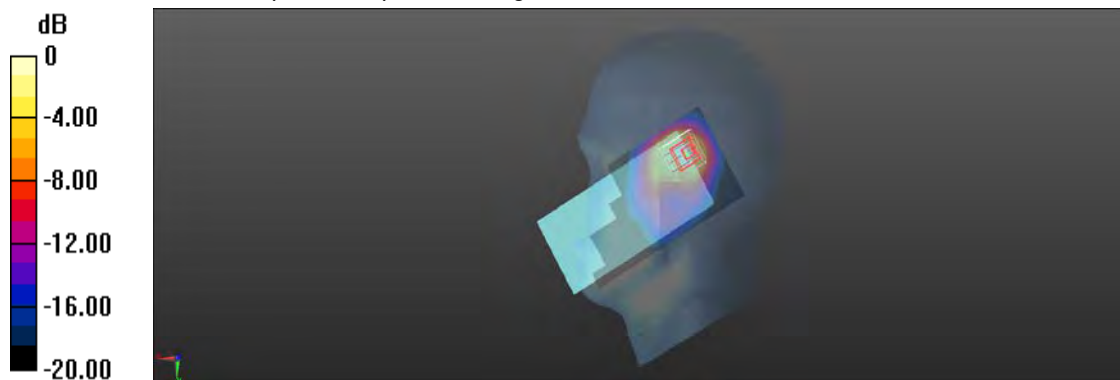
Peak SAR (extrapolated) = 1.61 W/kg

SAR(1 g) = 0.804 W/kg; SAR(10 g) = 0.407 W/kg

Smallest distance from peaks to all points 3 dB below = 8.6 mm

Ratio of SAR at M2 to SAR at M1 = 51.5%

Maximum value of SAR (measured) = 1.25 W/kg



0 dB = 1.25 W/kg = 0.97 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/15

234_WCDMA Band I CH 9612_Right-Cheek_Ant Lower

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, WCDMA Band I (0); Frequency: 1922.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 1922.4$ MHz; $\sigma = 1.36$ S/m; $\epsilon_r = 41.009$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(8.41, 8.41, 8.41) @ 1922.4 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 0.125 W/kg

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

Reference Value = 8.589 V/m; Power Drift = 0.05 dB

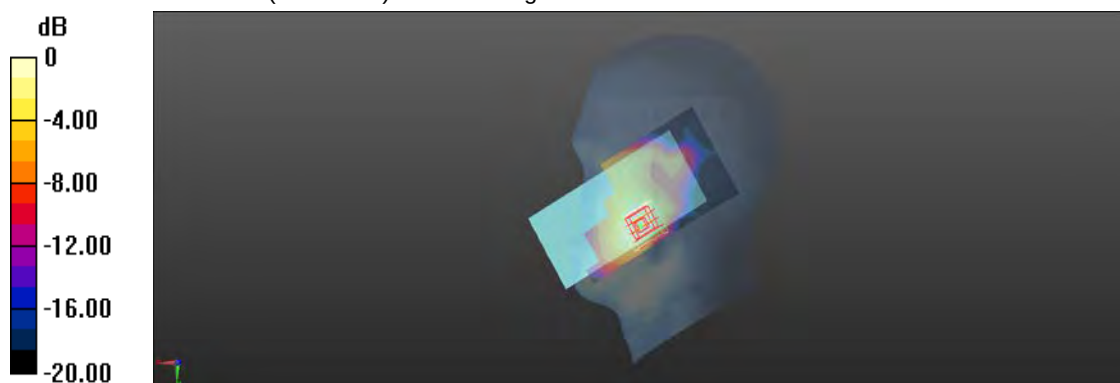
Peak SAR (extrapolated) = 0.130 W/kg

SAR(1 g) = 0.082 W/kg; SAR(10 g) = 0.051 W/kg

Smallest distance from peaks to all points 3 dB below = 13 mm

Ratio of SAR at M2 to SAR at M1 = 65.2%

Maximum value of SAR (measured) = 0.110 W/kg



0 dB = 0.110 W/kg = -9.59 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/16

109_WCDMA Band VIII CH 2800_Right-Tilted_Ant Upper

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, WCDMA Band VIII (0); Frequency: 900 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 900$ MHz; $\sigma = 0.968$ S/m; $\epsilon_r = 41.549$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(9.67, 9.67, 9.67) @ 900 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.72 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 37.90 V/m; Power Drift = -0.07 dB

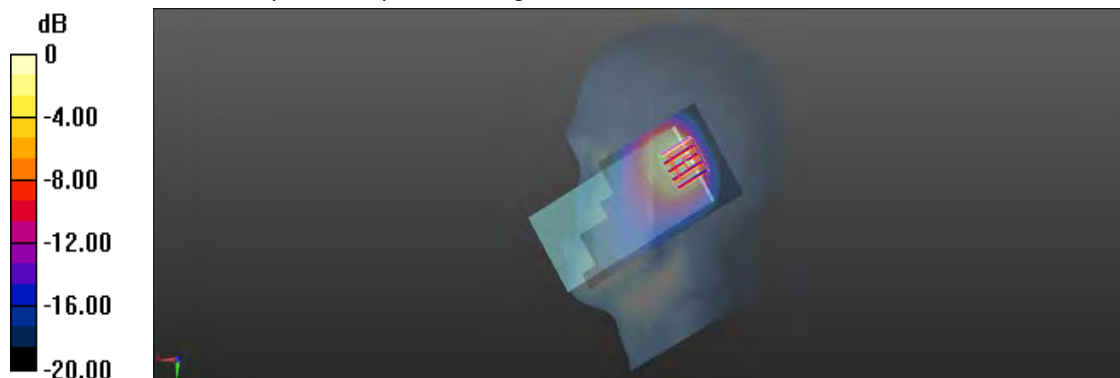
Peak SAR (extrapolated) = 2.01 W/kg

SAR(1 g) = 0.801 W/kg; SAR(10 g) = 0.466 W/kg

Smallest distance from peaks to all points 3 dB below = 6.4 mm

Ratio of SAR at M2 to SAR at M1 = 39.8%

Maximum value of SAR (measured) = 1.44 W/kg



0 dB = 1.44 W/kg = 1.58 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/16

252_WCDMA Band VIII CH 2737_Left-Cheek_Ant Lower

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, WCDMA Band VIII (0); Frequency: 887.4 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 887.4$ MHz; $\sigma = 0.955$ S/m; $\epsilon_r = 41.697$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(9.67, 9.67, 9.67) @ 887.4 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.422 W/kg

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

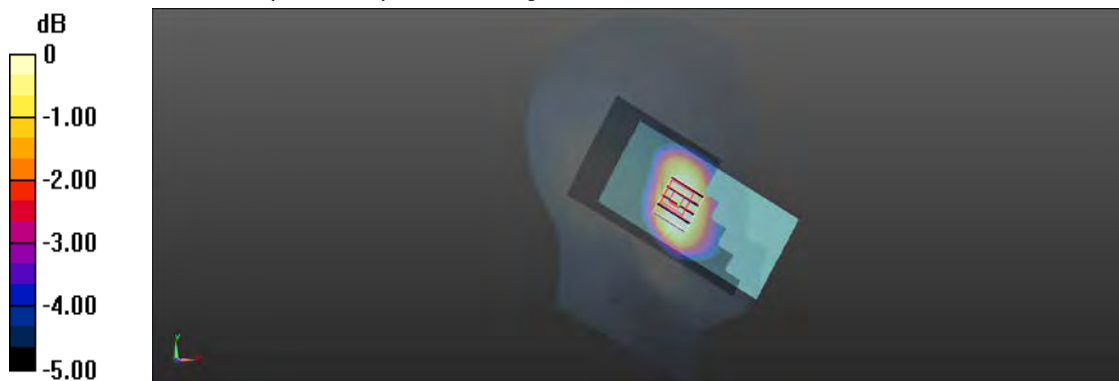
Reference Value = 21.15 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.417 W/kg

SAR(1 g) = 0.334 W/kg; SAR(10 g) = 0.266 W/kg

Ratio of SAR at M2 to SAR at M1 = 80.5%

Maximum value of SAR (measured) = 0.384 W/kg



0 dB = 0.384 W/kg = -4.16 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/15

104_LTE Band 1 CH 18100_QPSK_BW 20M_18RB Size 82RB Offset_Right-Tilted_Ant Upper

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, Generic LTE (0); Frequency: 1930 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 1930$ MHz; $\sigma = 1.365$ S/m; $\epsilon_r = 41.009$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(8.41, 8.41, 8.41) @ 1930 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.52 W/kg

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

Reference Value = 34.54 V/m; Power Drift = 0.17 dB

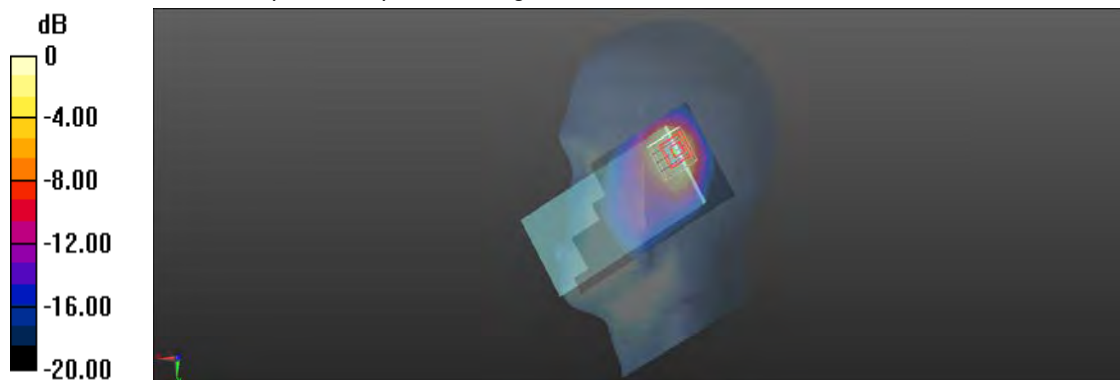
Peak SAR (extrapolated) = 1.91 W/kg

SAR(1 g) = 0.962 W/kg; SAR(10 g) = 0.471 W/kg

Smallest distance from peaks to all points 3 dB below = 9.4 mm

Ratio of SAR at M2 to SAR at M1 = 53.9%

Maximum value of SAR (measured) = 1.44 W/kg



0 dB = 1.44 W/kg = 1.58 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/15

222_LTE Band 1 CH 18025_QPSK_BW 5M_8RB Size 17RB Offset_Right-Cheek_Ant Lower

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, Generic LTE (0); Frequency: 1922.5 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 1922.5$ MHz; $\sigma = 1.36$ S/m; $\epsilon_r = 41.009$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(8.41, 8.41, 8.41) @ 1922.5 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.307 W/kg

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

Reference Value = 13.47 V/m; Power Drift = 0.06 dB

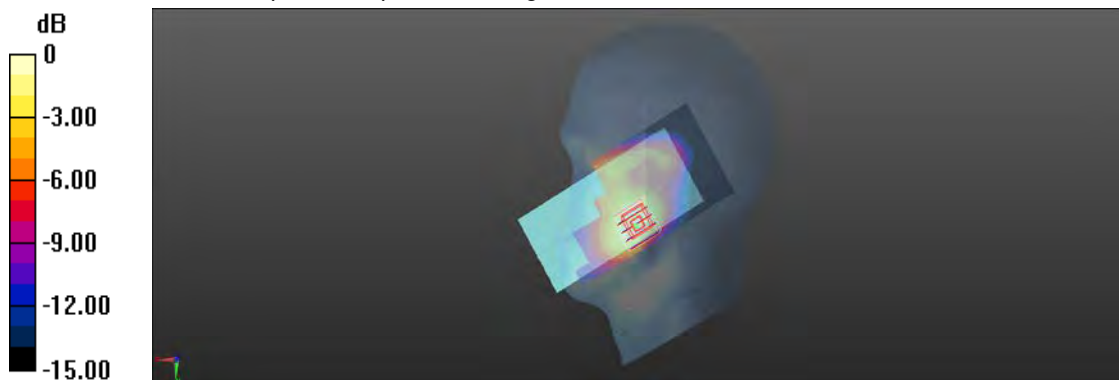
Peak SAR (extrapolated) = 0.315 W/kg

SAR(1 g) = 0.203 W/kg; SAR(10 g) = 0.127 W/kg

Smallest distance from peaks to all points 3 dB below = 14 mm

Ratio of SAR at M2 to SAR at M1 = 66.5%

Maximum value of SAR (measured) = 0.272 W/kg



0 dB = 0.272 W/kg = -5.65 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/15

105_LTE Band 3 CH 19850_QPSK_BW 20M_18RB Size 0RB Offset_Right-Cheek_Ant Upper

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, Generic LTE (0); Frequency: 1775 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 1775$ MHz; $\sigma = 1.38$ S/m; $\epsilon_r = 38.938$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(9.05, 9.05, 9.05) @ 1775 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.27 W/kg

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

Reference Value = 31.29 V/m; Power Drift = 0.01 dB

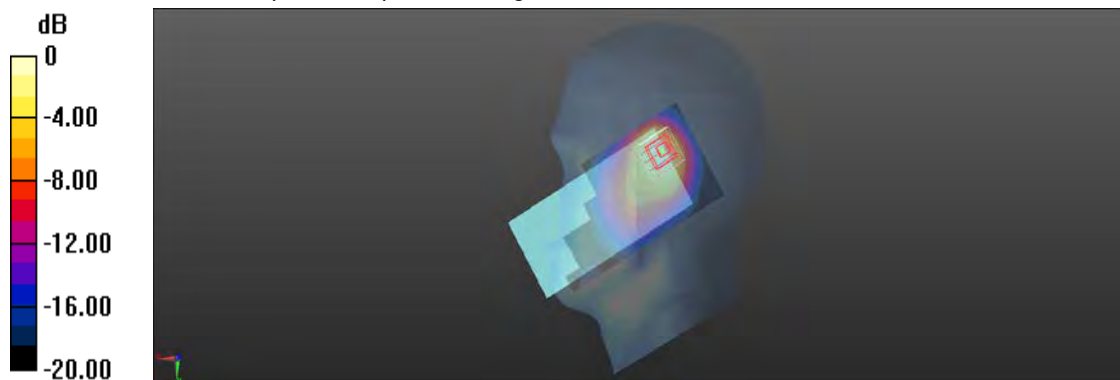
Peak SAR (extrapolated) = 1.42 W/kg

SAR(1 g) = 0.776 W/kg; SAR(10 g) = 0.410 W/kg

Smallest distance from peaks to all points 3 dB below = 8.6 mm

Ratio of SAR at M2 to SAR at M1 = 54.8%

Maximum value of SAR (measured) = 1.08 W/kg



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

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/15

229_LTE Band 3 CH 19943_QPSK_BW 1.4M_5RB Size 1RB Offset_Right-Cheek_Ant Lower

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, Generic LTE (0); Frequency: 1784.3 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 1784.3$ MHz; $\sigma = 1.387$ S/m; $\epsilon_r = 38.938$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(9.05, 9.05, 9.05) @ 1784.3 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.263 W/kg

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

Reference Value = 12.09 V/m; Power Drift = 0.04 dB

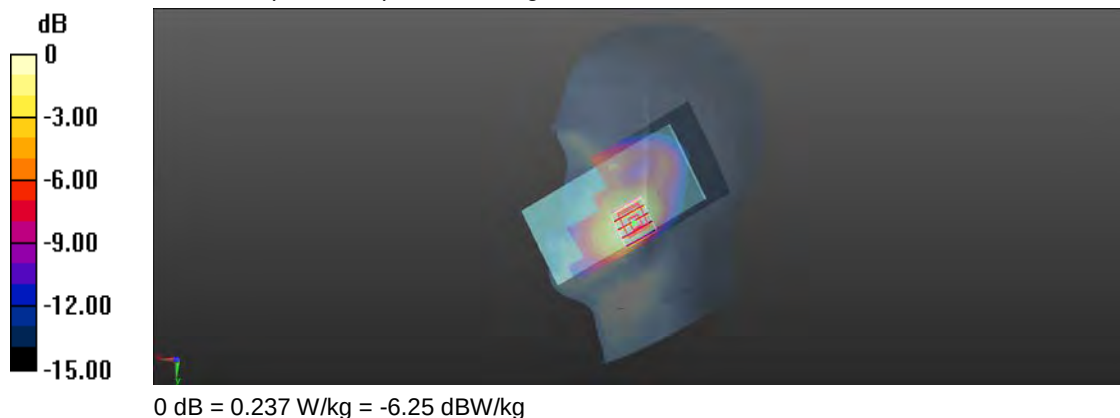
Peak SAR (extrapolated) = 0.270 W/kg

SAR(1 g) = 0.181 W/kg; SAR(10 g) = 0.114 W/kg

Smallest distance from peaks to all points 3 dB below = 13.4 mm

Ratio of SAR at M2 to SAR at M1 = 69.4%

Maximum value of SAR (measured) = 0.237 W/kg



Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/17

101_LTE Band 7 CH 20850_QPSK_BW 20M_1RB Size 99RB Offset_Right-Tilted_Ant Upper

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, Generic LTE (0); Frequency: 2510 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 2510$ MHz; $\sigma = 1.901$ S/m; $\epsilon_r = 39.539$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(8, 8, 8) @ 2510 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.18 W/kg

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

Reference Value = 24.41 V/m; Power Drift = 0.02 dB

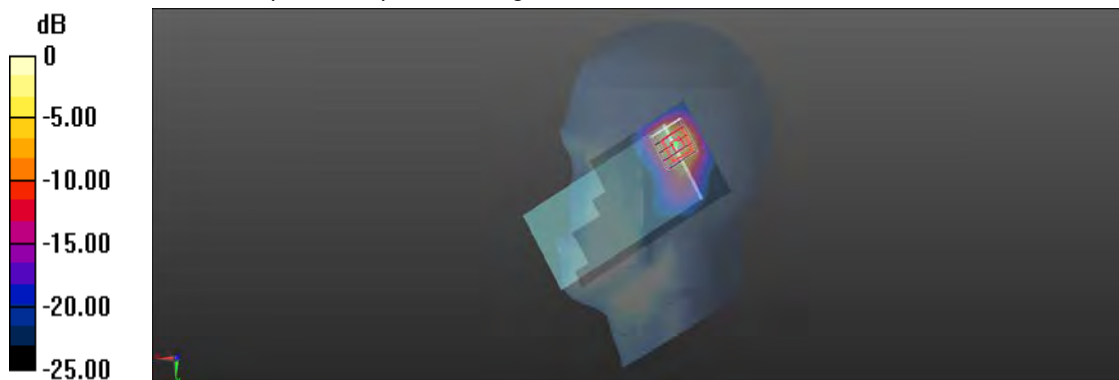
Peak SAR (extrapolated) = 2.04 W/kg

SAR(1 g) = 0.840 W/kg; SAR(10 g) = 0.342 W/kg

Smallest distance from peaks to all points 3 dB below = 7.2 mm

Ratio of SAR at M2 to SAR at M1 = 41.4%

Maximum value of SAR (measured) = 1.49 W/kg



0 dB = 1.49 W/kg = 1.73 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/17

204_LTE Band 7 CH 20775_QPSK_BW 5M_8RB Size 17RB Offset_Left-Cheek_Ant Lower

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, Generic LTE (0); Frequency: 2502.5 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 2502.5$ MHz; $\sigma = 1.891$ S/m; $\epsilon_r = 39.545$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(8, 8, 8) @ 2502.5 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.551 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.21 V/m; Power Drift = 0.09 dB

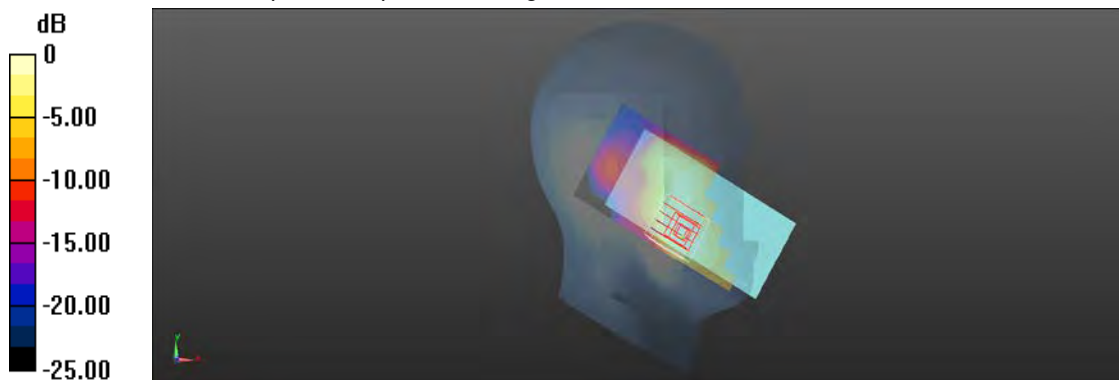
Peak SAR (extrapolated) = 0.614 W/kg

SAR(1 g) = 0.324 W/kg; SAR(10 g) = 0.176 W/kg

Smallest distance from peaks to all points 3 dB below = 10.9 mm

Ratio of SAR at M2 to SAR at M1 = 52.3%

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



0 dB = 0.481 W/kg = -3.18 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/16

108_LTE Band 8 CH 21650_QPSK_BW 10M_12RB Size 38RB Offset_Right-Cheek_Ant Upper

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, Generic LTE (0); Frequency: 900 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 900$ MHz; $\sigma = 0.968$ S/m; $\epsilon_r = 41.549$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(9.67, 9.67, 9.67) @ 900 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.53 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 35.24 V/m; Power Drift = 0.02 dB

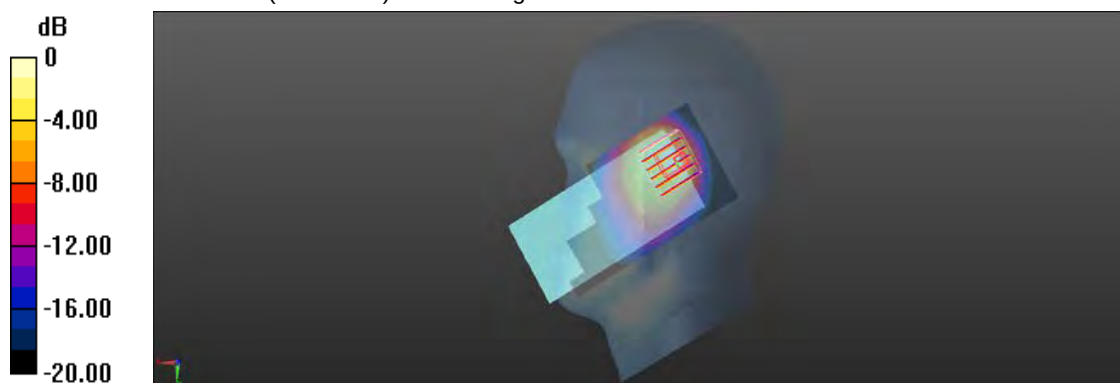
Peak SAR (extrapolated) = 1.81 W/kg

SAR(1 g) = 0.712 W/kg; SAR(10 g) = 0.406 W/kg

Smallest distance from peaks to all points 3 dB below = 6.4 mm

Ratio of SAR at M2 to SAR at M1 = 39.6%

Maximum value of SAR (measured) = 1.29 W/kg



0 dB = 1.29 W/kg = 1.11 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/16

240_LTE Band 8 CH 21550_QPSK_BW 10M_12RB Size 0RB Offset_Left-Cheek_Ant Lower

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, Generic LTE (0); Frequency: 890 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 890$ MHz; $\sigma = 0.958$ S/m; $\epsilon_r = 41.662$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(9.67, 9.67, 9.67) @ 890 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.460 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.53 V/m; Power Drift = -0.00 dB

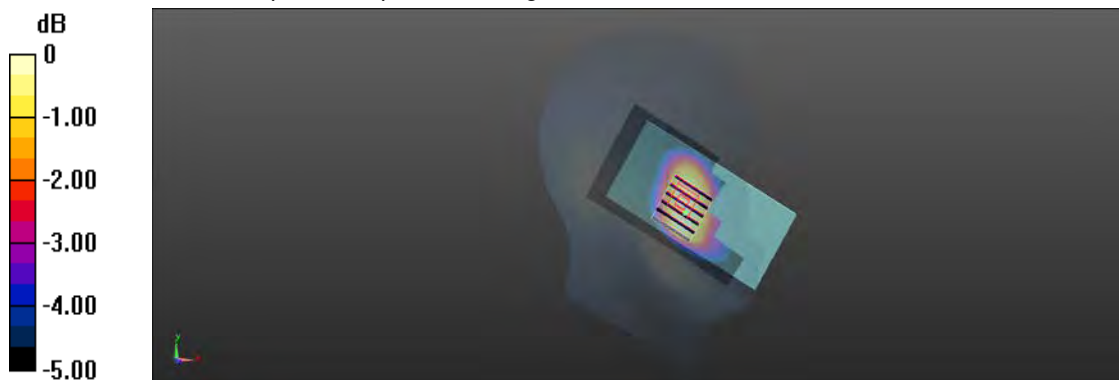
Peak SAR (extrapolated) = 0.476 W/kg

SAR(1 g) = 0.374 W/kg; SAR(10 g) = 0.291 W/kg

Smallest distance from peaks to all points 3 dB below = 23 mm

Ratio of SAR at M2 to SAR at M1 = 80.3%

Maximum value of SAR (measured) = 0.441 W/kg



0 dB = 0.441 W/kg = -3.56 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/16

107_LTE Band 28 CH 27560_QPSK_BW 20M_18RB Size 82RB Offset_Right-Cheek_Ant Upper

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, Generic LTE (0); Frequency: 738 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 738 \text{ MHz}$; $\sigma = 0.895 \text{ S/m}$; $\epsilon_r = 42.745$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(10.03, 10.03, 10.03) @ 738 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 1.19 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 35.05 V/m; Power Drift = -0.06 dB

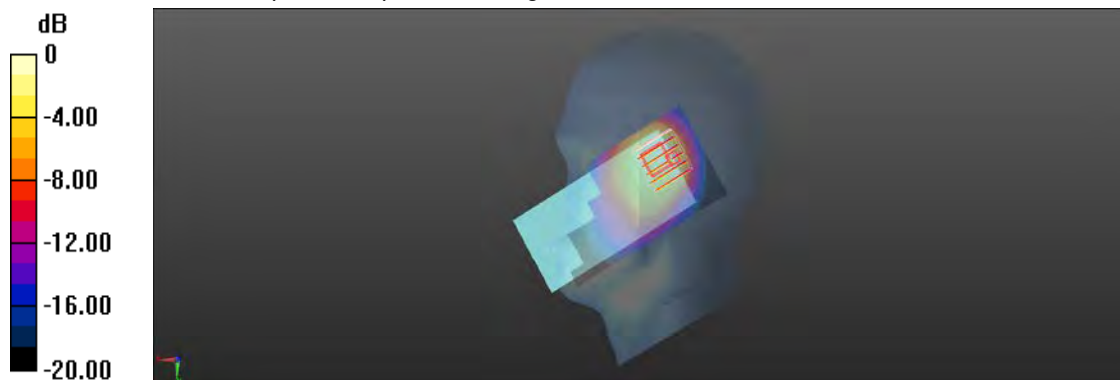
Peak SAR (extrapolated) = 1.37 W/kg

SAR(1 g) = 0.585 W/kg; SAR(10 g) = 0.365 W/kg

Smallest distance from peaks to all points 3 dB below = 6.4 mm

Ratio of SAR at M2 to SAR at M1 = 42%

Maximum value of SAR (measured) = 0.964 W/kg



0 dB = 0.964 W/kg = -0.16 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/16

246_LTE Band 28 CH 27310_QPSK_BW 20M_1RB Size 82RB Offset_Left-Cheek_Ant Lower

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, Generic LTE (0); Frequency: 713 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 713 \text{ MHz}$; $\sigma = 0.872 \text{ S/m}$; $\epsilon_r = 43.094$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(10.03, 10.03, 10.03) @ 713 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.275 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

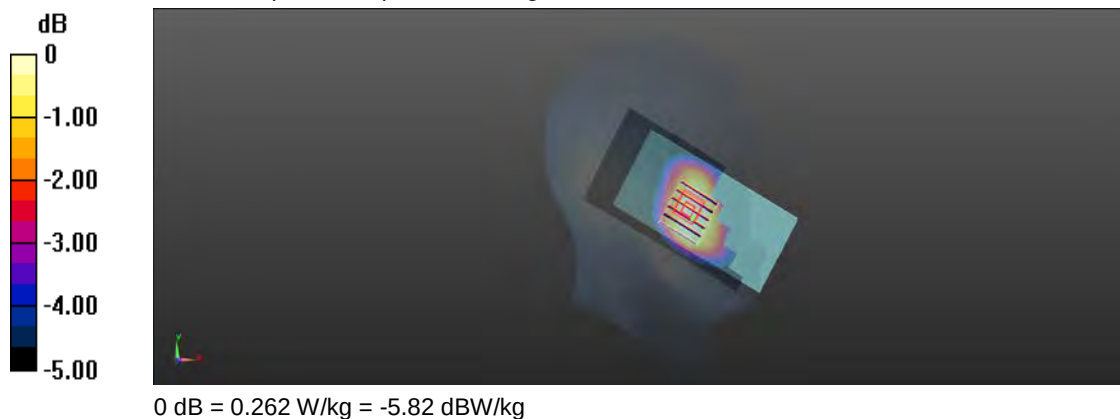
Reference Value = 18.01 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.276 W/kg

SAR(1 g) = 0.235 W/kg; SAR(10 g) = 0.195 W/kg

Ratio of SAR at M2 to SAR at M1 = 85.7%

Maximum value of SAR (measured) = 0.262 W/kg



Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/17

102_LTE Band 38 CH 38000_QPSK_BW 20M_18RB Size 0RB Offset_Right-Tilted_Ant Upper

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, Generic LTE (0); Frequency: 2595 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 2595$ MHz; $\sigma = 2.012$ S/m; $\epsilon_r = 39.287$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(8, 8, 8) @ 2595 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.47 W/kg

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

Reference Value = 26.47 V/m; Power Drift = 0.11 dB

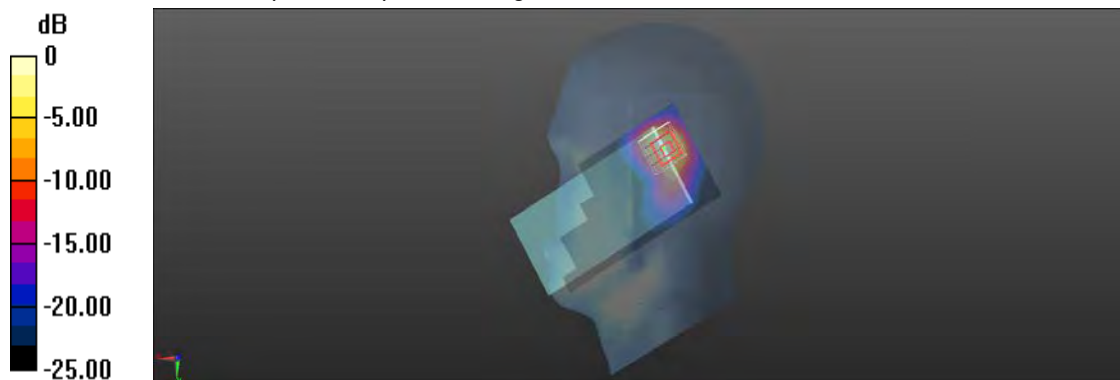
Peak SAR (extrapolated) = 2.49 W/kg

SAR(1 g) = 1.02 W/kg; SAR(10 g) = 0.412 W/kg

Smallest distance from peaks to all points 3 dB below = 8 mm

Ratio of SAR at M2 to SAR at M1 = 41.4%

Maximum value of SAR (measured) = 1.73 W/kg



0 dB = 1.73 W/kg = 2.38 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/17

210_LTE Band 38 CH 37775_QPSK_BW 5M_8RB Size 0RB Offset_Left-Cheek_Ant Lower

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, Generic LTE (0); Frequency: 2572.5 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 2572.5$ MHz; $\sigma = 1.978$ S/m; $\epsilon_r = 39.375$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(8, 8, 8) @ 2572.5 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.80 V/m; Power Drift = 0.07 dB

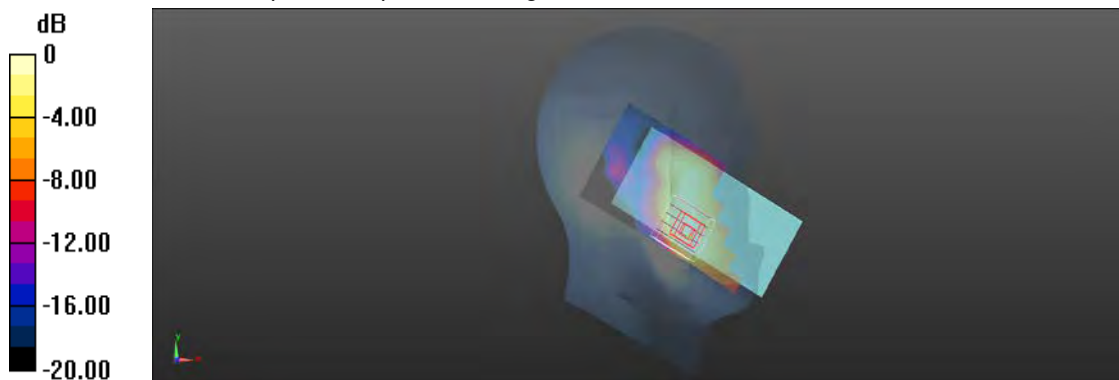
Peak SAR (extrapolated) = 0.392 W/kg

SAR(1 g) = 0.202 W/kg; SAR(10 g) = 0.107 W/kg

Smallest distance from peaks to all points 3 dB below = 11.3 mm

Ratio of SAR at M2 to SAR at M1 = 50.9%

Maximum value of SAR (measured) = 0.307 W/kg



0 dB = 0.307 W/kg = -5.13 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/17

103_LTE Band 41 CH 40640_QPSK_BW 20M_8RB Size 17RB Offset_Right-Tilted_Ant Upper

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, Generic LTE (0); Frequency: 2595 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 2595$ MHz; $\sigma = 2.012$ S/m; $\epsilon_r = 39.287$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(8, 8, 8) @ 2595 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.32 W/kg

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

Reference Value = 25.49 V/m; Power Drift = 0.07 dB

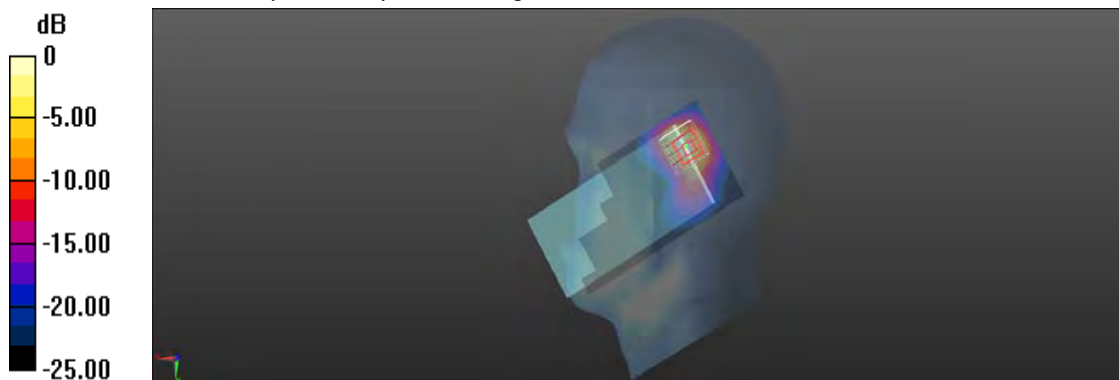
Peak SAR (extrapolated) = 2.21 W/kg

SAR(1 g) = 0.897 W/kg; SAR(10 g) = 0.363 W/kg

Smallest distance from peaks to all points 3 dB below = 8 mm

Ratio of SAR at M2 to SAR at M1 = 40.9%

Maximum value of SAR (measured) = 1.54 W/kg



0 dB = 1.54 W/kg = 1.88 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/7/17

216_LTE Band 41 CH 40140_QPSK_BW 20M_18RB Size 82RB Offset_Left-Cheek_Ant Lower

DUT: 21061119DG; Type: Mobile Phone

Communication System: UID 0, Generic LTE (0); Frequency: 2545 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 2545$ MHz; $\sigma = 1.944$ S/m; $\epsilon_r = 39.486$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN7647; ConvF(8, 8, 8) @ 2545 MHz; Calibrated: 2021/4/15
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1253; Calibrated: 2020/12/16
- Phantom: Twin SAM; Type: QD 000 P40 CD; Serial: 1623
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Area Scan (61x131x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 0.306 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 11.66 V/m; Power Drift = 0.16 dB

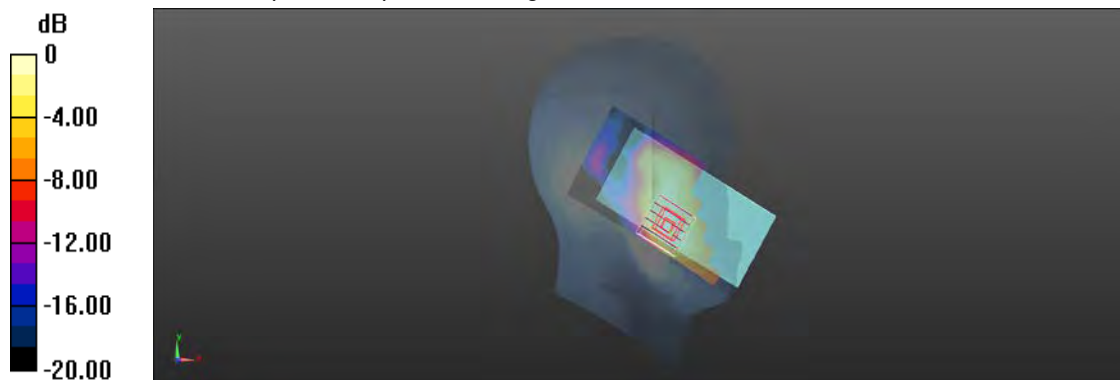
Peak SAR (extrapolated) = 0.374 W/kg

SAR(1 g) = 0.193 W/kg; SAR(10 g) = 0.104 W/kg

Smallest distance from peaks to all points 3 dB below = 11.3 mm

Ratio of SAR at M2 to SAR at M1 = 51.2%

Maximum value of SAR (measured) = 0.285 W/kg



0 dB = 0.285 W/kg = -5.45 dBW/kg



Appendix C - Calibration

All of the instruments Calibration information are listed below.

- Dipole _ D750V3 SN:1004
- Dipole _ D900V2 SN:073
- Dipole _ D1800V2 SN:265
- Dipole _ D1950V3 SN:1117
- Dipole _ D2600V2 SN:1007
- Probe _ EX3DV4 SN:7647
- DAE _ DAE4 SN:1253



ST-044_20-185

 In Collaboration with 
CALIBRATION LABORATORY

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CNAS L0570

Client **ATL**

Certificate No: **Z20-60365**

CALIBRATION CERTIFICATE

Object **D750V3 - SN: 1004**

Calibration Procedure(s) **FF-Z11-003-01**
Calibration Procedures for dipole validation kits

Calibration date: **September 17, 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	106276	12-May-20 (CTTL, No.J20X02965)	May-21
Power sensor NRP6A	101369	12-May-20 (CTTL, No.J20X02965)	May-21
ReferenceProbe EX3DV4	SN 3617	30-Jan-20(SPEAG,No.EX3-3617_Jan20)	Jan-21
DAE4	SN 771	10-Feb-20(CTTL-SPEAG,No.Z20-60017)	Feb-21
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	25-Feb-20 (CTTL, No.J20X00516)	Feb-21
NetworkAnalyzer E5071C	MY46110673	10-Feb-20 (CTTL, No.J20X00515)	Feb-21

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: September 22, 2020

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: Z20-60365

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ST-004_21-105

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E-mail: cttl@chinattl.com http://www.chinattl.cn

Client ATL

Certificate No: Z21-60127

CALIBRATION CERTIFICATE

Object D900V2 - SN:073

Calibration Procedure(s) FF-Z11-003-01
Calibration Procedures for dipole validation kits

Calibration date: April 13, 2021

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	106276	12-May-20 (CTTL, No.J20X02965)	May-21
Power sensor NRP6A	101369	12-May-20 (CTTL, No.J20X02965)	May-21
Reference Probe EX3DV4	SN 7307	29-May-20(SPEAG,No.EX3-7307_May20)	May-21
DAE4	SN 777	08-Jan-21(CTTL-SPEAG,No.Z21-60003)	Jan-22
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	01-Feb-21 (CTTL, No.J21X00593)	Jan-22
NetworkAnalyzer E5071C	MY46110673	14-Jan-21 (CTTL, No.J21X00232)	Jan-22

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: April 19, 2021

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Certificate No: Z21-60127

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ST-001-21-104

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CALIBRATION
CNAS L0570

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, Chi
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com http://www.chinattl.cn

Client ATL

Certificate No: Z21-60128

CALIBRATION CERTIFICATE

Object D1800V2 - SN: 265

Calibration Procedure(s) FF-Z11-003-01
Calibration Procedures for dipole validation kits

Calibration date: April 14, 2021

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	106276	12-May-20 (CTTL, No.J20X02965)	May-21
Power sensor NRP6A	101369	12-May-20 (CTTL, No.J20X02965)	May-21
ReferenceProbe EX3DV4	SN 7307	29-May-20(SPEAG,No.EX3-7307_May20)	May-21
DAE4	SN 777	08-Jan-21(CTTL-SPEAG,No.Z21-60003)	Jan-22
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	01-Feb-21 (CTTL, No.J21X00593)	Jan-22
NetworkAnalyzer E5071C	MY46110673	14-Jan-21 (CTTL, No.J21X00232)	Jan-22

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: April 19, 2021

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Certificate No: Z21-60128

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Client **ATL**

Certificate No: **Z21-60129**

CALIBRATION CERTIFICATE

Object **D1950V3 - SN: 1117**

Calibration Procedure(s) **FF-Z11-003-01**
Calibration Procedures for dipole validation kits

Calibration date: **April 13, 2021**

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	106276	12-May-20 (CTTL, No.J20X02965)	May-21
Power sensor NRP6A	101369	12-May-20 (CTTL, No.J20X02965)	May-21
ReferenceProbe EX3DV4	SN 7307	29-May-20(SPEAG,No.EX3-7307_May20)	May-21
DAE4	SN 777	08-Jan-21(CTTL-SPEAG,No.Z21-60003)	Jan-22
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	01-Feb-21 (CTTL, No.J21X00593)	Jan-22
NetworkAnalyzer E5071C	MY46110673	14-Jan-21 (CTTL, No.J21X00232)	Jan-22

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: April 19, 2021

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Certificate No: Z21-60129

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Client ATL

Certificate No: Z20-60374

CALIBRATION CERTIFICATE

Object D2600V2 - SN: 1007

Calibration Procedure(s) FF-Z11-003-01
Calibration Procedures for dipole validation kits

Calibration date: September 29, 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	106276	12-May-20 (CTTL, No.J20X02965)	May-21
Power sensor NRP6A	101369	12-May-20 (CTTL, No.J20X02965)	May-21
Reference Probe EX3DV4	SN 3617	30-Jan-20(SPEAG,No.EX3-3617_Jan20)	Jan-21
DAE4	SN 771	10-Feb-20(CTTL-SPEAG,No.Z20-60017)	Feb-21
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	25-Feb-20 (CTTL, No.J20X00516)	Feb-21
Network Analyzer E5071C	MY46110673	10-Feb-20 (CTTL, No.J20X00515)	Feb-21

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: October 4, 2020

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Certificate No: Z20-60374

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EX-073_21-141
Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **ATL (Auden)**

Certificate No: **EX3-7647_Apr21**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:7647**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-14.v6, QA CAL-23.v5, QA CAL-25.v7**
Calibration procedure for dosimetric E-field probes

Calibration date: **April 15, 2021**

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 $(22 \pm 3)^{\circ}\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	09-Apr-21 (No. 217-03291/0292)	Apr-22
Power sensor NRP-Z91	SN: 103244	09-Apr-21 (No. 217-03291)	Apr-22
Power sensor NRP-Z91	SN: 103245	09-Apr-21 (No. 217-03292)	Apr-22
Reference 20 dB Attenuator	SN: CC2552 (20x)	09-Apr-21 (No. 217-03343)	Apr-22
DAE4	SN: 660	23-Dec-20 (No. DAE4-660_Dec20)	Dec-21
Reference Probe ES3DV2	SN: 3013	30-Dec-20 (No. ES3-3013_Dec20)	Dec-21
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-20)	In house check: Jun-22
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-20)	In house check: Jun-22
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-20)	In house check: Jun-22
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-20)	In house check: Jun-22
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-20)	In house check: Oct-21

Calibrated by:	Name Jeton Kastrati	Function Laboratory Technician	Signature 
Approved by:	Name Katja Pokovic	Function Technical Manager	Signature 
			Issued: April 15, 2021

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Certificate No: EX3-7647_Apr21

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MR-275-21-003
Calibration Laboratory of
Schmid & Partner
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Zeughausstrasse 43, 8004 Zurich, Switzerland



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Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **Auden-KS**

Certificate No: **DAE4-1253_Dec20**

CALIBRATION CERTIFICATE

Object **DAE4 - SD 000 D04 BM - SN: 1253**

Calibration procedure(s) **QA CAL-06.v30**
Calibration procedure for the data acquisition electronics (DAE)

Calibration date: **December 16, 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)

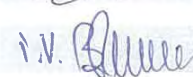
Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	07-Sep-20 (No:28647)	Sep-21
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Auto DAE Calibration Unit	SE UWS 053 AA 1001	09-Jan-20 (in house check)	In house check: Jan-21
Calibrator Box V2.1	SE UMS 006 AA 1002	09-Jan-20 (in house check)	In house check: Jan-21

Calibrated by: **Dominique Steffen** **Laboratory Technician**

Signature



Approved by: **Sven Kühn** **Deputy Manager**



Issued: December 16, 2020

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Certificate No: DAE4-1253_Dec20

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