TEST REPORT

Reference No.	:	WTX21X05046747W
FCC ID	:	VUJ-ATM660
Applicant	:	ATID Co., Ltd
Address	:	#1402, 83, Gasan digital 1-ro, Geumcheon-gu, Seoul, Republic of Korea. (ZIP code : 08589)
Product Name	:	Mobile Computer
Test Model	:	ATM660
Standards	:	FCC Part 2.1093 ANSI / IEEE C95.1 : 2005+A1:2010 ANSI / IEEE C95.3 : 2002(R2008) IEEE 1528 :2013
Date of Receipt sample	:	May.19, 2021
Date of Test	:	May.19, 2021 to May.31, 2021
Date of Issue	:	Jun.3, 2021
Test Result	:	**Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:

Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

Tel.: +86-755-33663308

Fax.: +86-755-33663309

Tested by:	Reviewed By:	Approved & Authorized By:
Jack Sun	Lion Cai	Silin Chen
Jack Sun / Project Engineer	Lion Cai / RF Manager	Silin Chen / Manager

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1. General Information

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: ATID Co., Ltd
Address of applicant: #1402, 83, Gasan digital 1-ro, Geumcheon-gu, Seoul, Republic of Korea. (ZIP code : 08589)

Manufacturer: ATID Co., Ltd
Address of manufacturer: #1402, 83, Gasan digital 1-ro, Geumcheon-gu, Seoul, Republic of Korea. (ZIP code : 08589)

General Description of EUT:	
Product Name:	Mobile Computer
Brand Name:	/
Model No.:	ATM660
Adding Model(s):	/
Rated Voltage:	DC3.85V by Battery
Battery:	4800mAh
Software Version:	V1.0
Hardware Version:	V1.0
Note: The test data is gathered from a production sample provided by the manufacturer.	

Technical Characteristics of EUT:	
2G	
Support Networks:	GSM, GPRS, EDGE
Support Band:	GSM850/PCS1900
Uplink Frequency:	GSM/GPRS/EDGE 850: 824~849MHz GSM/GPRS/EDGE 1900: 1850~1910MHz
Downlink Frequency:	GSM/GPRS/EDGE 850: 869~894MHz GSM/GPRS/EDGE 1900: 1930~1990MHz
RF Output Power:	GSM850: 33.28dBm, GSM1900: 29.95dBm EDGE850: 27.39dBm, EDGE1900: 25.69dBm
Type of Modulation:	GMSK, 8PSK
Type of Antenna:	Integral Antenna
Antenna Gain:	GSM850: -2.4dBi; GSM1900: -1.64dBi
GPRS/EDGE Class:	Class 12
3G	
Support Networks:	WCDMA, HSDPA, HSUPA
Support Band:	WCDMA Band 2, WCDMA Band 5
Uplink Frequency:	WCDMA Band 2: 1850~1910MHz WCDMA Band 5: 824~849MHz
Downlink Frequency:	WCDMA Band 2: 1930~1990MHz WCDMA Band 5: 869~894MHz
RF Output Power:	WCDMA Band 2: 22.90dBm, WCDMA Band 5: 23.43dBm
Type of Modulation:	BPSK
Antenna Type:	Integral Antenna
Antenna Gain:	WCDMA Band 2: -1.64dBi, WCDMA Band 5: -2.4dBi
4G	
Support Networks:	FDD-LTE, TDD-LTE
Support Band:	FDD-LTE Band 2, 4, 7,12, 13, 17, TDD-LTE Band 41
Uplink Frequency:	FDD-LTE Band 2: Tx: 1850-1910MHz, FDD-LTE Band 4: Tx: 1710-1755MHz, FDD-LTE Band 7: Tx: 2500-2570MHz, FDD-LTE Band 12: Tx: 699-716MHz, FDD-LTE Band 13: Tx: 777-787MHz, FDD-LTE Band 17: Tx: 704-716MHz TDD-LTE Band 41: Tx: 2557.5-2652.5MHz
Downlink Frequency:	FDD-LTE Band 2: Rx: 1930-1990MHz, FDD-LTE Band 4: Rx: 2110-2155MHz, FDD-LTE Band 7: Rx: 2620-2690MHz, FDD-LTE Band 12: Rx: 729-746MHz,

	FDD-LTE Band 13: Rx: 746-756MHz, FDD-LTE Band 17: Rx: 734-746MHz TDD-LTE Band 41: Rx: 2557.5-2652.5MHz
RF Output Power:	FDD-LTE Band 2: 23.93dBm FDD-LTE Band 4: 24.29dBm FDD-LTE Band 7: 23.76dBm FDD-LTE Band 12: 23.73dBm FDD-LTE Band 13: 24.01dBm FDD-LTE Band 17: 23.84dBm TDD-LTE Band 41: 24.36dBm
Type of Modulation:	QPSK, 16QAM
Antenna Type:	Integral Antenna
Antenna Gain:	FDD-LTE Band 2: -1.64dBi, FDD-LTE Band 4: -1.72dBi, FDD-LTE Band 7: -1.45dBi, FDD-LTE Band 12: -2.6dBi, FDD-LTE Band 13: -2.51dBi, FDD-LTE Band 17: -2.57dBi TDD-LTE Band 41: -1.53dBi,
WIFI(2.4G)	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz for 802.11b/g/n-HT20 2422-2452MHz for 802.11n-HT40
RF Output Power:	7.51dBm (Conducted)
Type of Modulation:	DBPSK,BPSK,DQPSK,QPSK,16QAM,64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 150Mbps
Quantity of Channels:	11 for 802.11b/g/n-HT20 7 for 802.11n-HT40
Channel Separation:	5MHz
Antenna Type:	Integral Antenna
Antenna Gain:	1.78dBi
Bluetooth	
Bluetooth Version:	V5.0
Frequency Range:	2402-2480MHz
RF Output Power:	1.767dBm (Conducted)
Data Rate:	1Mbps, 2Mbps, 3Mbps
Modulation:	GFSK, Pi/4 QDPSK, 8DPSK
Quantity of Channels:	79/40
Channel Separation:	1MHz/2MHz
Antenna Type:	Integral Antenna
Antenna Gain:	1.78dBi
WIFI(5G)	

Support Standards:	802.11a, 802.11n-HT20/40, 802.11ac-VHT80,
Frequency Range:	Band 1: 5180-5240MHz,Band 4: 5745-5825MHz
RF Output Power:	10.619dBm (Conducted)
Type of Modulation:	BPSK, QPSK,16QAM,64QAM
Type of Antenna:	Integral Antenna
Antenna Gain:	0.76dBi

1.2 Test Standards

The following report is accordance with FCC 47 CFR Part 2.1093, ANSI/IEEE C95.1-2005, ANSI / IEEE C95.3 :2002, IEEE 1528-2013, KDB 447498 D01 v06, KDB 648474 D04 v01r03, KDB 248227 D01 v02r02, KDB 941225 D01 v03r01, KDB 941225 D05 v02r05 , and KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02.

The objective is to determine compliance with FCC Part 2.1093 of the Federal Communication Commissions rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02. The public notice KDB 447498 D01 v06 for Mobile and Portable Devices RF Exposure Procedure also.

1.4 Test Facility

Address of the test laboratory
Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.
Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road,Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990
Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010.Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A
The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

2. Summary of Test Results

The maximum results of Specific Absorption Rate (SAR) have found during testing are as follows:

Frequency Band	Head SAR	Body-worn (10mm Gap)	Hotspot (10mm Gap)	SAR_{1g} Limit (W/kg)
	Maximum SAR_{1g} (W/kg)	Maximum SAR_{1g} (W/kg)	Maximum SAR_{1g} (W/kg)	
GSM	0.096	0.206	0.349	1.6
WCDMA	0.093	0.346	0.346	1.6
LTE	0.639	0.506	0.664	1.6
WLAN 5G	**0.718**	**0.955**	**0.955**	1.6
Simultaneous Transmission	1.342	1.334	**1.334**	1.6

Remark:

*The highest reported SAR values for head, body-worn, router(hotspot), and simultaneous transmission conditions are **0.718W/kg, 0.955W/kg, 0.955W/kg, and 1.334W/kg** respectively.*

The device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR Part 2.1093 and ANSI/IEEE C95.1-2005, and had been tested in accordance with the measurement methods and procedure specified in IEEE 1528-2013 and KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02

3. Specific Absorption Rate (SAR)

3.1 Introduction

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

3.2 SAR Definition

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

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

SAR is expressed in units of Watts per kilogram (W/kg)
SAR measurement can be either related to the temperature elevation in tissue by

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

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

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

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

4. SAR Measurement System

4.1 The Measurement System

Comosar is a system that is able to determine the SAR distribution inside a phantom of human being according to different standards. The Comosar system consists of the following items:
- Main computer to control all the system
- 6 axis robot
- Data acquisition system
- Miniature E-field probe
- Phone holder
- Head simulating tissue

The following figure shows the system.

The EUT under test operating at the maximum power level is placed in the phone holder, under the phantom, which is filled with head simulating liquid. The E-Field probe measures the electric field inside the phantom. The OpenSAR software computes the results to give a SAR value in a 1g or 10g mass.

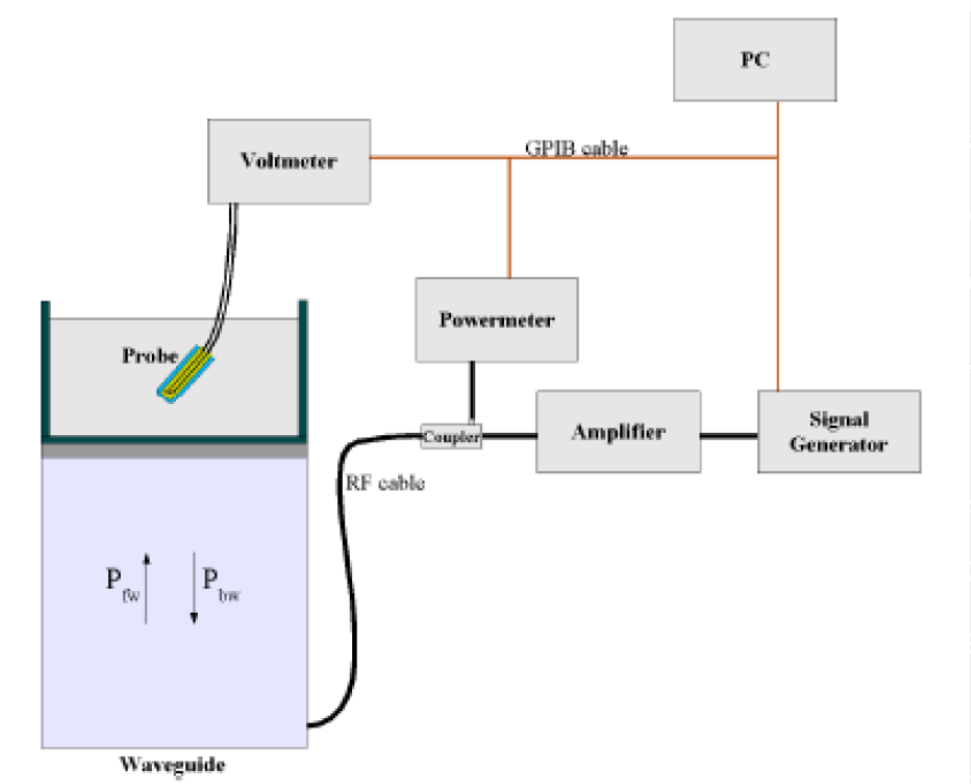
4.2 Probe

For the measurements the Specific Dosimetric E-Field Probe SSE2 SN 45/15 EPGO280 with following specifications is used
- Dynamic range: 0.01-100 W/kg
- Probe Length: 330 mm
- Length of Individual Dipoles: 4.5 mm
- Maximum external diameter: 8 mm
- Probe Tip External Diameter : 5 mm

- Distance between dipoles / probe extremity: 2.7mm
- Probe linearity: ＜0.25 dB
- Axial Isotropy: ＜0.25 dB
- Spherical Isotropy: ＜0.50 dB
- Calibration range: 700 to 3000MHz for head & body simulating liquid.

Angle between probe axis (evaluation axis) and suface normal line:1ess than 30°

Probe calibration is realized, in compliance with EN 62209-1 and IEEE 1528 STD, with CALISAR, Antennessa proprietary calibration system. The calibration is performed with the EN 62209-1 annexe technique using reference guide at the five frequencies.



$$SAR = \frac{4\left(P_{fw} - P_{bw}\right)}{ab\delta} \cos^2\left(\pi \frac{y}{a}\right) e^{-(2z/\delta)}$$

Where :

Pfw = Forward Power

Pbw = Backward Power

a and b =Waveguide dimensions

I = Skin depth

Keithley configuration:

Rate = Medium; Filter = ON; RDGS = 10; Filter type = Moving Average; Range auto after each calibration, a SAR measurement is performed on a validation dipole and compared with a NPL calibrated probe, to verify it.

The calibration factors, CF(N), for the 3 sensors corresponding to dipole 1, dipole 2 and dipole 3 are:

$$CF(N)=SAR(N)/Vlin(N)\ (N=1,2,3)$$

The linearised output voltage Vlin(N) is obtained from the displayed output voltage V(N) using

$$Vlin(N)=V(N)*(1+V(N)/DCP(N))\ (N=1,2,3)$$

where DCP is the diode compression point in mV.

4.3 Probe Calibration Process

Dosimetric Assessment Procedure

Each E-Probe/Probe Amplifier combination has unique calibration parameters. SATIMO Probe calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/cm2) using an with CALISAR, Antenna proprietary calibration system.

Free Space Assessment Procedure

The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and in a waveguide or other methodologies above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1mW/cm2.

Temperature Assessment Procedure

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated head tissue. The E-field in the medium correlates with the temperature rise in the dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C\frac{\Delta T}{\Delta t}$$

Where:

Δt = exposure time (30 seconds),

C = heat capacity of tissue (brain or muscle),

ΔT = temperature increase due to RF exposure.

SAR is proportional to $\Delta T/\Delta t$, the initial rate of tissue heating, before thermal diffusion takes place. The electric field in the simulated tissue can be used to estimate SAR by equating the thermally derived SAR to that with the E- field component.

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

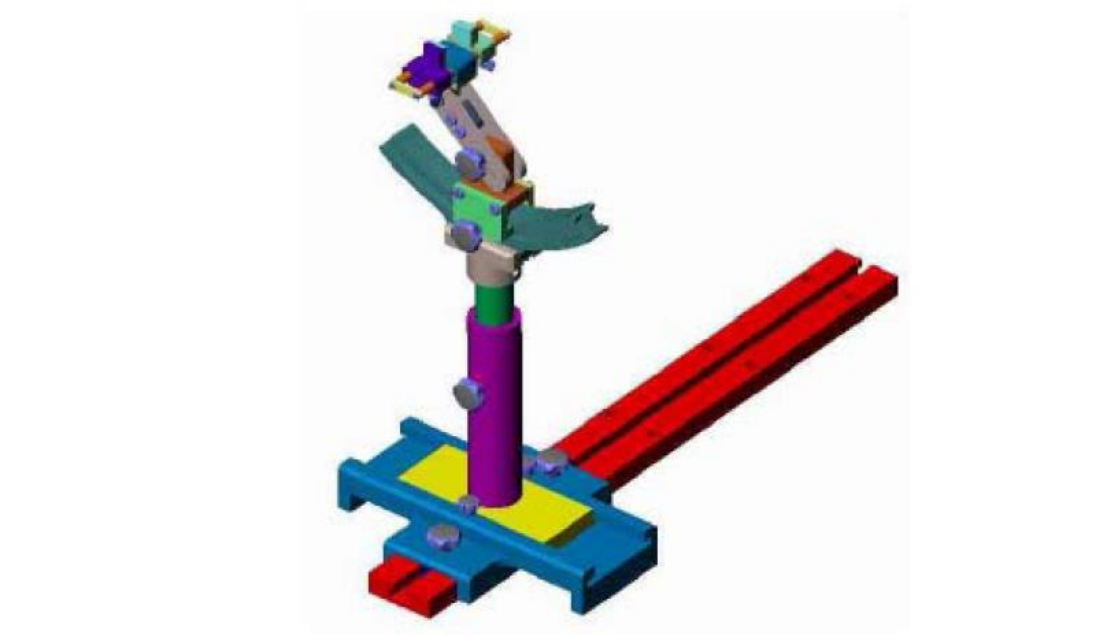
Where:
σ = simulated tissue conductivity,
ρ = Tissue density (1.25 g/cm3 for brain tissue)

4.4 Phantom

For the measurements the Specific Anthropomorphic Mannequin (SAM) defined by the IEEE SCC-34/SC2 group is used. The phantom is a polyurethane shell integrated in a wooden table. The thickness of the phantom amounts to 2mm +/- 0.2mm. It enables the dosimetric evaluation of left and right phone usage and includes an additional flat phantom part for the simplified performance check. The phantom set-up includes a cover, which prevents the evaporation of the liquid.

4.5 Device Holder

The positioning system allows obtaining cheek and tilting position with a very good accuracy. In compliance with CENELEC, the tilt angle uncertainty is lower than 1 °.



System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

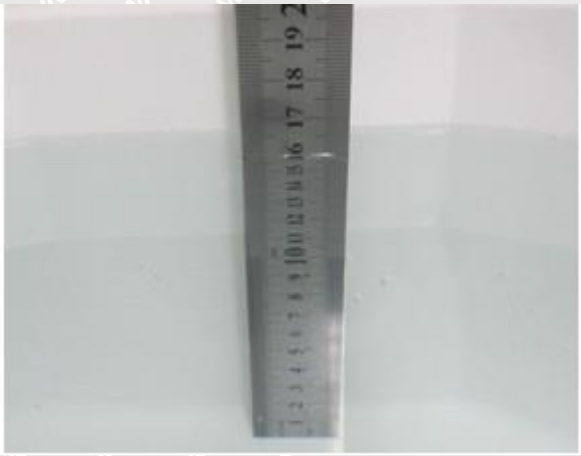
4.6 Test Equipment List

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
E-Field Probe	MVG	SSE5	SN 09/13 EP168	2020-05-22	2022-05-21
E-Field Probe	MVG	SSE2	SN 45/15 EPGO280	2020-07-03	2022-07-02
835MHz Dipole	MVG	SID835	SN 47/12 DIP 0G835-204	2020-03-11	2022-03-10
1800MHz Dipole	MVG	SID1800	SN 47/12 DIP 1G800-206	2020-03-11	2022-03-10
1900MHz Dipole	MVG	SID1900	SN 47/12 DIP 1G900-207	2020-03-11	2022-03-10
2450MHz Dipole	MVG	SID2450	SN 13/15 DIP 2G450-364	2020-03-11	2022-03-10
2600MHz Dipole	MVG	SID2600	SN 13/15 DIP 2G600-365	2020-03-11	2022-03-10
5 GHz Waveguide	MVG	SWG5500	SN 49/16 WGA45	2020-07-03	2022-07-02
Dielectric Probe	SATIMO	SCLMP	SN 47/12 OCPG49	2020-03-11	2022-03-10
SAM Phantom	SATIMO	SAM	SN/ 47/12 SAM95	N/A	N/A
Multi Meter	Keithley	Keithley 2000	4006367	2021-03-27	2022-03-26
Power meter	Keithley	3500	JC-2017-09-001	2021-03-27	2022-03-26
Power meter	Keithley	3500	JC-2017-09-001	2021-03-27	2022-03-26
Power Sensor	Agilent	11636B	JC-2017-10-002	2021-03-27	2022-03-26
Signal Generator	Rohde & Schwarz	SMR20	100047	2021-03-27	2022-03-26
Universal Tester	Rohde & Schwarz	CMU200	112315	2021-03-27	2022-03-26
Communications Tester	Rohde & Schwarz	CMW500	148650	2021-03-27	2022-03-26
Network Analyzer	HP	8753C	SEMT-1064	2021-03-27	2022-03-26
Directional Couplers	Agilent	778D	20160	2021-03-27	2022-03-26

5. Tissue Simulating Liquids

5.1 Composition of Tissue Simulating Liquid

For the measurement of the field distribution inside the SAM phantom with SMTIMO, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. Please see the following photos for the liquid height.



Liquid Height for Head SAR

Liquid Height for Body SAR

The Composition of Tissue Simulating Liquid

Frequency (MHz)	Water (%)	Salt (%)	Sugar (%)	HEC (%)	Preventol (%)	DGBE (%)
Head						
750	41.1	1.4	57.0	0.2	0.3	0
835	40.3	1.4	57.9	0.2	0.2	0
1700-1900	55.2	0.3	0	0	0	44.5
2450	55.0	0.1	0	0	0	44.9
2600	54.9	0.1	0	0	0	45.0
Body						
750	50.0	0.8	48.8	0.2	0.2	0
835	50.8	0.9	48.1	0.1	0.1	0
1700-1900	70.2	0.4	0	0	0	29.4
2450	68.6	0.1	0	0	0	31.3
2600	68.2	0.1	0	0	0	31.7

Frequency (MHz)	Water (%)	Hexyl Carbitol (%)	Triton X-100 (%)
Head			
5000-6000	65.52	17.24	17.24
Body			

5000-6000	78.6	10.7	10.7

5.2 Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in P1528.

Target Frequency (MHz)	**Head**		**Body**	
	Conductivity (σ)	**Permittivity (ε_r)**	**Conductivity (σ)**	**Permittivity (ε_r)**
150	0.76	52.3	0.80	61.9
300	0.87	45.3	0.92	58.2
450	0.87	43.5	0.94	56.7
750	**0.89**	**41.9**	**0.96**	**55.5**
835	**0.90**	**41.5**	**0.97**	**55.2**
900	0.97	41.5	1.05	55.0
915	0.98	41.5	1.06	55.0
1450	1.20	40.5	1.30	54.0
1610	1.29	40.3	1.40	53.8
1750	**1.37**	**40.1**	**1.49**	**53.4**
1800-2000	**1.40**	**40.0**	**1.52**	**53.3**
2450	**1.80**	**39.2**	**1.95**	**52.7**
3000	2.40	38.5	2.73	52.0
5200	4.66	36.0	5.30	49.0
5800	5.27	35.3	6.00	48.2

5.3 Tissue Calibration Result

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

Calibration Result for Dielectric Parameters of Tissue Simulating Liquid

Head/Body Tissue Simulating Liquid									
Freq. MHz.	Temp. (℃)	Conductivity			Permittivity			Limit (%)	Date
		Reading (σ)	Target (σ)	Delta (%)	Reading (ε r)	Target (ε r)	Delta (%)		
750	21.2	0.86	0.89	-3.37	41.32	41.90	-1.38	±5	2021-05-26
835	21.2	0.87	0.90	-3.33	41.11	41.50	-0.94	±5	2021-05-26
1750	21.3	1.37	1.37	0.00	39.02	40.1	-2.69	±5	2021-05-26
1900	21.3	1.38	1.40	-1.43	38.56	40.00	-3.60	±5	2021-05-28
2450	21.3	1.74	1.80	-3.33	38.15	39.20	-2.68	±5	2021-05-28
2600	21.3	1.93	1.96	-1.53	38.63	39.0	-0.95	±5	2021-05-28
5200	22.3	4.87	4.66	4.51	35.6	36.0	-1.11	±5	2021-05-29
5600	22.3	5.21	5.07	2.76	35.3	35.5	-0.56	±5	2021-05-29

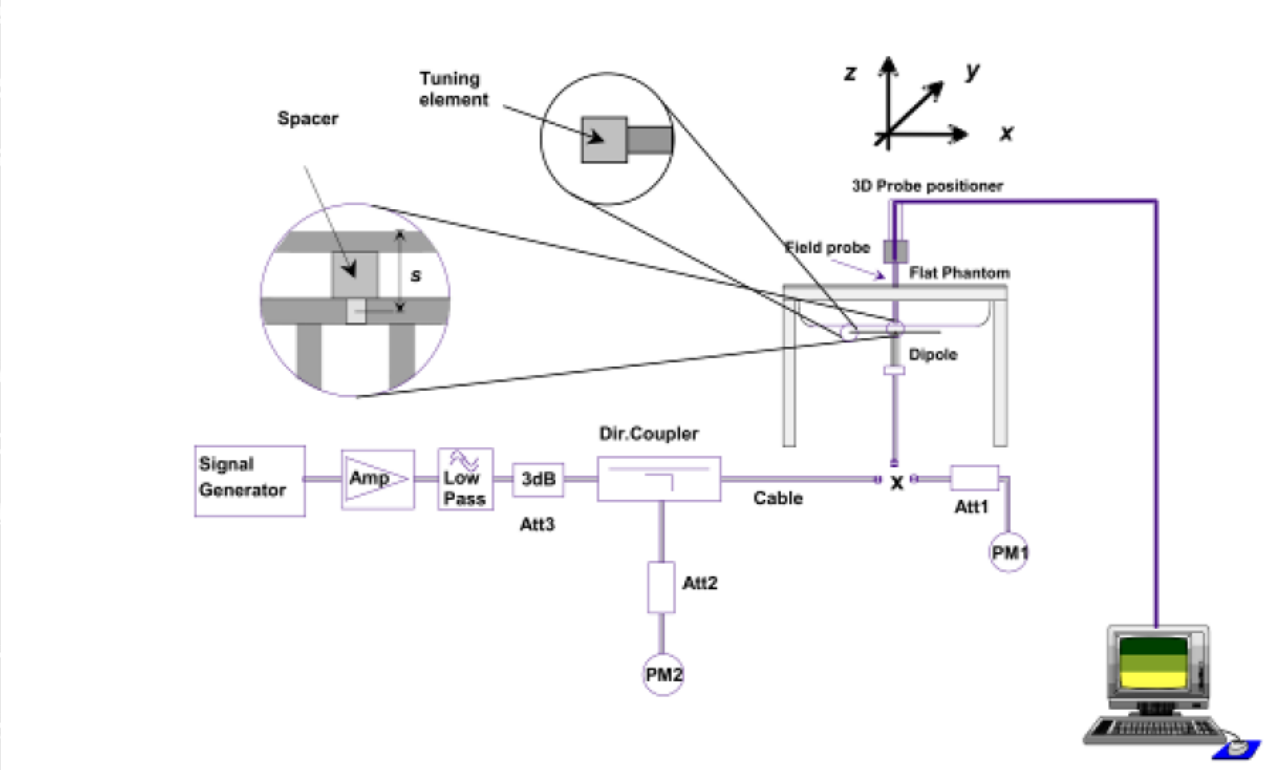
6. SAR Measurement Evaluation

6.1 Purpose of System Performance Check

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

6.2 System Setup

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave which comes from a signal generator at frequency 835MHz ,1800MHz, 1900MHz 2450MHz,2600MHz,and 5GHz. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom.



System Verification Setup Block Diagram

Setup Photo of Dipole Antenna

The output power on dipole port must be calibrated to 24 dBm(250 mW) before dipole is connected.
The output power on 5 GHz Waveguide must be calibrated to 20 dBm (100mW) before 5 GHz Waveguide is connected.

6.3 Validation Results

Comparing to the original SAR value provided by SATIMO, the validation data should be within its specification of 10 %. Table 6.1 shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion.

Frequency	Targeted SAR_{1g}	Measured SAR_{1g}	Normalized SAR_{1g}	Tolerance	Date
MHz	(W/kg)	(W/kg)	(W/kg)	(%)	
Head/Body					
750	8.40	2.16	8.64	2.86	2020-10-22
835	9.65	2.41	9.64	-0.10	2020-10-22
1800	38.49	9.61	38.44	-0.13	2020-10-24
1900	39.59	9.91	39.64	0.13	2020-10-24
2450	53.76	13.45	53.8	0.07	2020-10-26
2600	55.07	13.67	54.68	-0.71	2020-10-26
5200	161.23	16.946	169.95	5.41	2020-10-13
5400	165.58	17.681	176.81	6.78	2020-10-13
5600	173.58	18.604	186.04	7.18	2020-10-13
5800	179.32	18.604	186.04	3.75	2020-10-13
Body					

750	8.40	2.12	8.48	0.95	2020-10-22
835	9.36	2.35	9.4	0.43	2020-10-22
1800	38.29	9.58	38.32	0.08	2020-10-24
1900	39.01	9.78	39.12	0.28	2020-10-24
2450	50.33	12.59	50.36	0.06	2020-10-26
2600	53.92	13.43	53.72	-0.37	2020-10-26
5200	154.45	16.681	166.81	8.00	2020-10-13
5400	163.31	17.329	173.29	6.11	2020-10-13
5600	165.72	17.111	171.11	3.25	2020-10-13
5800	170.71	16.681	166.81	-2.28	2020-10-13

Remark: Referring to IEEE 1528-2013, Section 8.2, The system check shall be performed at a test frequency that is within ±10% or ±100 MHz of the compliance test mid-band frequency, so the 1750 MHz system verification is made of 1800MHz Dipole.

Targeted and Measurement SAR

Please refer to Annex A for the plots of system performance check.

7. EUT Testing Position

7.1 Define Two Imaginary Lines on The Handset

(a) The vertical centerline passes through two points on the front side of the handset - the midpoint of the width w_t of the handset at the level of the acoustic output, and the midpoint of the width w_b of the bottom of the handset.

(b) The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.

(c) The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.

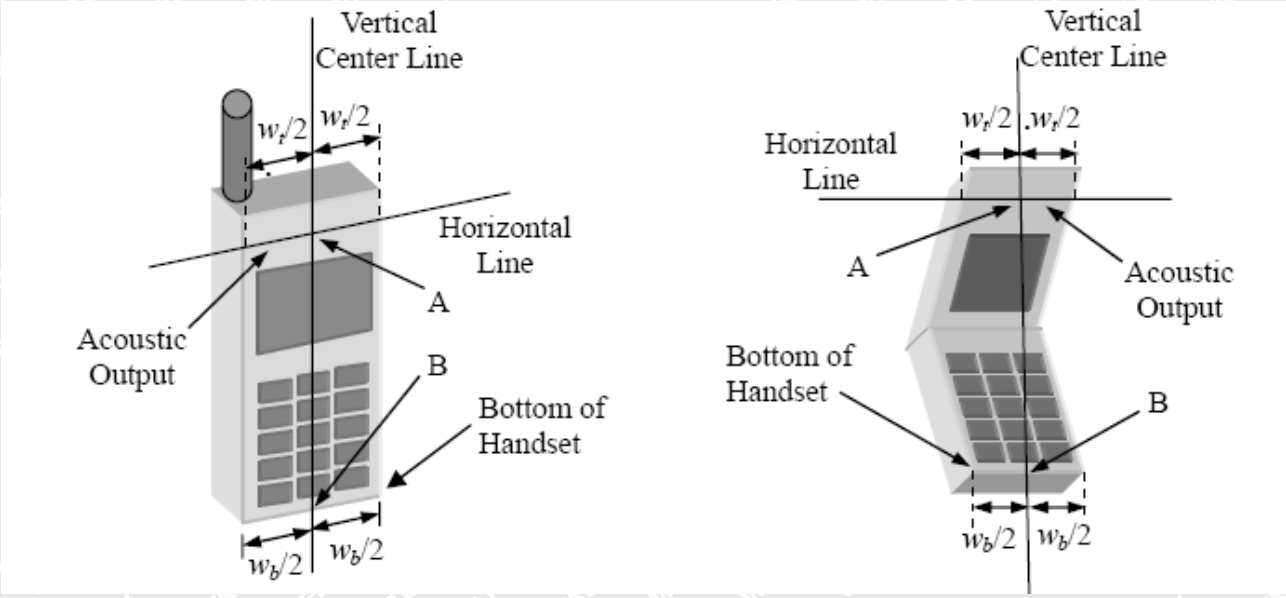


Illustration for Handset Vertical and Horizontal Reference Lines

7.2 Cheek Position

(a) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.
(b) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see Fig. 7.2).

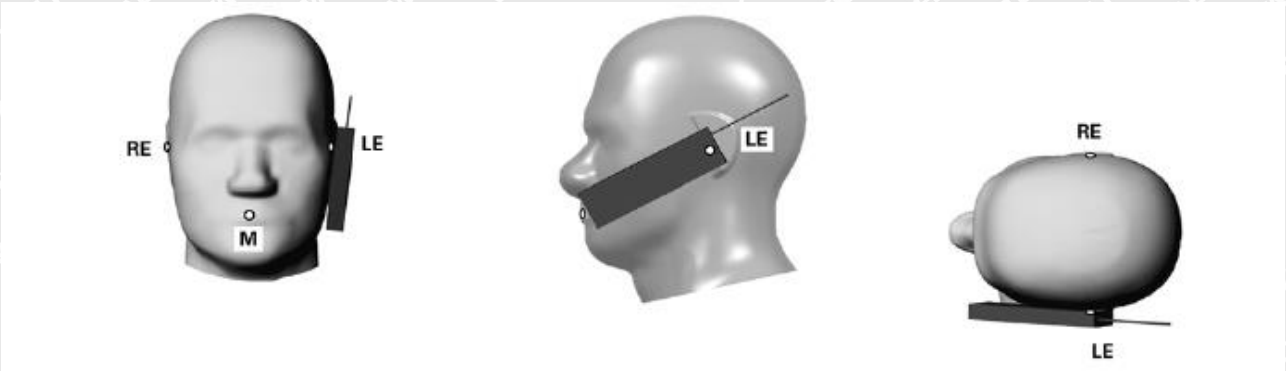


Illustration for Cheek Position

7.3 Tilted Position

(a) To position the device in the “cheek” position described above.
(b) While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost (see Fig. 7.3).

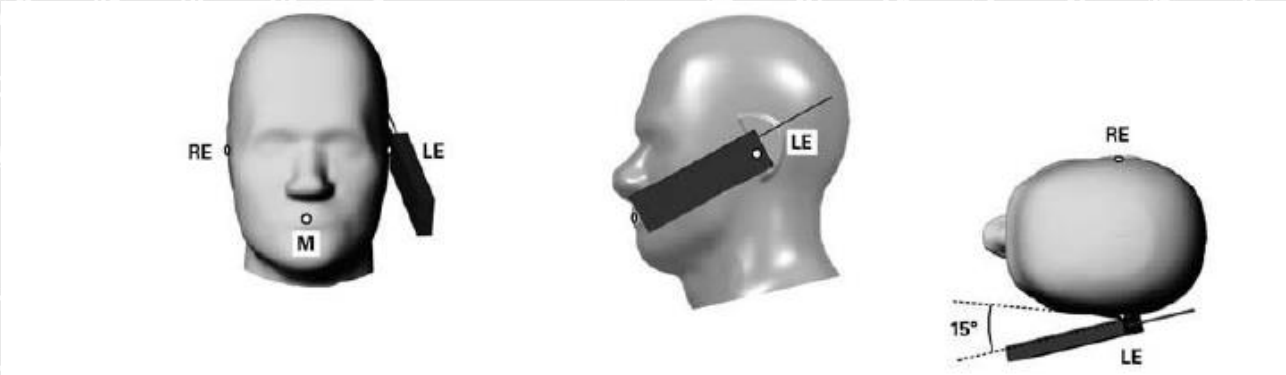


Illustration for Tilted Position

7.4 Body Position

(a) To position the device parallel to the phantom surface with each side.
(b) To adjust the device parallel to the flat phantom.
(c) To adjust the distance between the device surface and the flat phantom to 10mm.

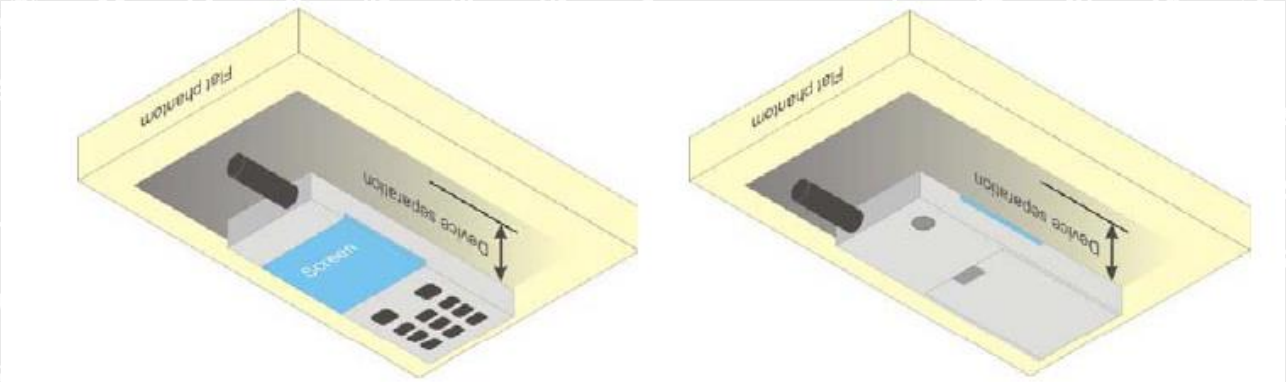
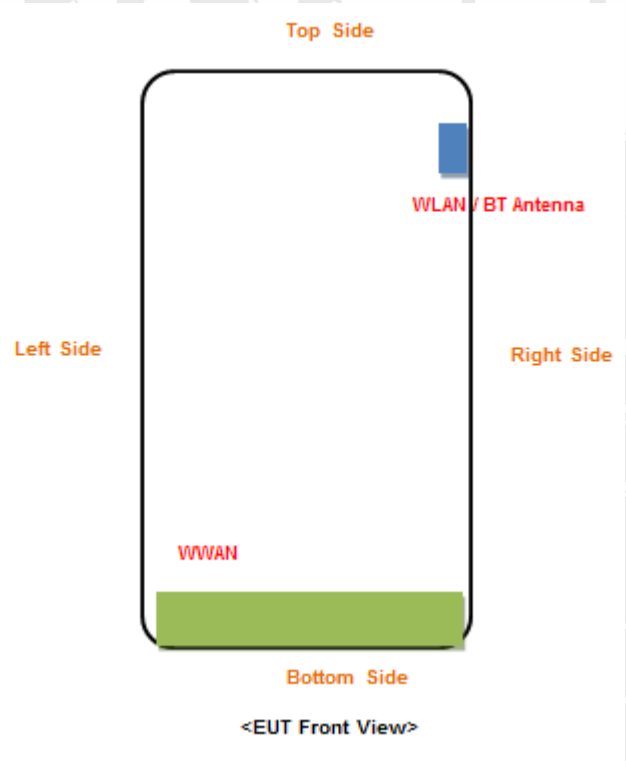


Illustration for Body Position

7.5 EUT Antenna Position



Block Diagram for EUT Antenna Position

Distance of EUT antenna-to-edge/surface(mm), Test distance:10mm						
Antennas	Back side	Front side	Left Edge	Right Edge	Top Edge	Bottom Edge
WWAN	<25	<25	<25	<25	140	<25
WLAN	<25	<25	60	<25	<25	120
Bluetooth	<25	<25	60	<25	<25	120

7.6 EUT Testing Position

Head/Body mode SAR assessments are required for this device. This EUT was tested in different positions for different SAR test modes, more information as below:

Head SAR tests				
Antennas	**Right Cheek**	**Left Cheek**	**Right Tilted**	**Left Tilted**
WWAN	Yes	Yes	Yes	Yes
WLAN	Yes	Yes	Yes	Yes

Body SAR tests, Test distance: 10mm						
Antennas	**Front**	**Back**	**Left Side**	**Right Side**	**Top Side**	**Bottom Side**
WWAN	Yes	Yes	Yes	Yes	No	Yes
WLAN	Yes	Yes	No	Yes	Yes	No

Body-worn SAR tests, Test distance: 10mm		
Antennas	**Front**	**Back**
WWAN	Yes	Yes
WLAN	Yes	Yes

Remark:

1. Referring to KDB 941225 D06, when the overall device length and width are >= 9cm*5cm, the test separation distances is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.

2. Referring to KDB 648474 D04 Handset SAR v01r03, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg

Please refer to Annex D for the EUT test setup photos.

8. SAR Measurement Procedures

8.1 Measurement Procedures

The measurement procedures are as follows:
(a) Use base station simulator (if applicable) or engineering software to transmit RF power continuously (continuous Tx) in the highest power channel.
(b) Keep EUT to radiate maximum output power or 100% factor (if applicable)
(c) Measure output power through RF cable and power meter.
(d) Place the EUT in the positions as Annex D demonstrates.
(e) Set scan area, grid size and other setting on the SATIMO software.
(f) Measure SAR results for the highest power channel on each testing position.
(g) Find out the largest SAR result on these testing positions of each band
(h) Measure SAR results for other channels in worst SAR testing position if the SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:
(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

8.2 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The SATIMO software includes all numerical procedures necessary to evaluate the spatial peak SAR value.
The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.
The entire evaluation of the spatial peak values is performed within the post-processing engine. The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:
(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

8.3 Area & Zoom Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan measures 5x5x7 points with step size 8, 8 and 5 mm for 300 MHz to 3 GHz, and 8x8x8 points with step size 4, 4 and 2.5 mm for 3 GHz to 6 GHz. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g.

8.4 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing (step-size is 4, 4 and 2.5 mm). When all volume scan were completed, the software can combine and subsequently superpose these measurement data to calculating the multiband SAR.

8.5 SAR Averaged Methods

The local SAR inside the phantom is measured using small dipole sensing elements inside a probe body. The probe tip must not be in contact with the phantom surface in order to minimize measurements errors, but the highest local SAR will occur at the surface of the phantom.

An extrapolation is using to determinate this highest local SAR values. The extrapolation is based on a fourth-order least-square polynomial fit of measured data. The local SAR value is then extrapolated from the liquid surface with a 1mm step.

The measurements have to be performed over a limited time (due to the duration of the battery) so the step of measurement is high. It could vary between 5 and 8 mm. To obtain an accurate assessment of the maximum SAR averaged over 10g and 1 g requires a very fine resolution in the three dimensional scanned data array.

8.6 Power Drift Monitoring

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

9. SAR Test Result

9.1 Conducted RF Output Power

GSM - Burst Average Power (dBm)								
Band	**GSM850**			**Tune-up power (dBm)**	**PCS1900**			**Tune-up power (dBm)**
Channel	**128**	**190**	**251**		**512**	**661**	**810**	
Frequency (MHz)	**824.2**	**836.6**	**848.8**		**1850.2**	**1880**	**1909.8**	
GSM	33.22	**33.28**	33.06	33.5	29.61	29.72	**29.95**	30.0
GPRS (1 slot)	33.22	**32.27**	33.05	33.5	29.60	29.72	**29.94**	30.0
GPRS (2 slots)	32.25	32.28	32.08	32.5	28.64	28.75	28.97	29.0
GPRS (3 slots)	30.13	30.20	29.99	30.5	27.61	27.67	27.94	28.0
GPRS (4 slots)	28.93	29.00	28.78	29.0	26.51	26.58	26.86	27.0
EDGE (1 slot)	27.38	27.18	**27.39**	27.5	**25.69**	25.27	25.47	26.0
EDGE (2 slots)	26.09	26.18	25.86	26.5	24.19	24.10	24.57	25.0
EDGE (3 slots)	24.71	24.93	24.90	25.0	23.17	22.80	23.23	23.5
EDGE (4 slots)	23.32	23.45	23.18	23.5	22.23	22.04	22.25	22.5

GSM - Source-Based Time-Average Power (dBm)								
Band	**GSM850**			**Tune-up power (dBm)**	**PCS1900**			**Tune-up power (dBm)**
Channel	**128**	**190**	**251**		**512**	**661**	**810**	
Frequency (MHz)	**824.2**	**836.6**	**848.8**		**1850.2**	**1880**	**1909.8**	
GSM	24.22	**24.28**	24.06	24.5	20.61	20.72	**20.95**	21.0
GPRS (1 slot)	24.22	23.27	24.05	24.5	20.60	20.72	20.94	21.0
GPRS (2 slots)	26.25	**26.28**	26.08	26.5	22.64	22.75	**22.97**	23.0
GPRS (3 slots)	25.88	25.95	25.74	26.0	23.36	23.42	23.69	24.0
GPRS (4 slots)	25.93	26.00	25.78	26.0	23.51	23.58	23.86	24.0
EDGE (1 slot)	18.38	18.18	18.39	19.0	16.69	16.27	16.47	17.0
EDGE (2 slots)	20.09	20.18	19.86	20.5	18.19	18.10	18.57	19.0
EDGE (3 slots)	20.46	20.68	20.65	21.0	18.92	18.55	18.98	19.0
EDGE (4 slots)	20.32	20.45	20.18	20.5	19.23	19.04	19.25	19.5
Note: The source-based time-averaged power is linearly scaled the maximum burst averaged power based on time slots. The calculated method are shown as below: Source based time-average power = Burst averaged power - Duty cycle factor in dB Duty cycle factor = 9 dB for 1 Tx slot, 6 dB for 2 Tx slots, 4.25 dB for 3 Tx slots, 3 dB for 4 Tx slots								

Remark:

1. For Head SAR testing, GSM should be evaluated, therefore the EUT was set in GSM for GSM850 and GSM1900 due to its highest source-based time-average power.
2. For Body SAR testing, GPRS should be evaluated, therefore the EUT was set in GPRS (4TX slots) for GSM850 and

GPRS (4TX slots) for GSM1900 due to its highest source-based time-average power.

3. Per KDB 447498 D01 v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.

4. The DUT do not support DTM function.

5. The DUT do not support Hotspot function.

WCDMA - Average Power (dBm)								
Band	**WCDMA Band II**				**WCDMA Band V**			
Channel	**9262**	**9400**	**9538**	**Tune-up power (dBm)**	**4132**	**4183**	**4233**	**Tune-up power (dBm)**
Frequency (MHz)	**1852.4**	**1880.0**	**1907.6**		**826.4**	**836.4**	**846.6**	
RMC 12.2k	22.83	22.84	**22.90**	23.0	**23.43**	23.34	23.33	23.5
HSDPA Subtest-1	21.87	21.86	21.92	22.0	22.46	22.40	22.34	22.5
HSDPA Subtest-2	21.36	21.56	21.50	22.0	22.01	21.87	21.93	22.5
HSDPA Subtest-3	20.27	20.31	20.49	20.5	21.03	20.70	20.88	21.5
HSDPA Subtest-4	20.03	20.37	19.95	20.5	21.13	20.97	20.98	21.5
HSUPA Subtest-1	20.47	21.68	21.89	22.0	20.90	22.25	22.16	22.5
HSUPA Subtest-2	21.76	21.72	21.88	22.0	22.23	22.25	22.22	22.5
HSUPA Subtest-3	20.14	20.37	20.82	21.0	20.59	21.25	21.00	21.5
HSUPA Subtest-4	21.85	21.88	21.94	22.0	22.48	22.39	22.37	22.5
HSUPA Subtest-5	20.51	21.18	21.26	21.5	21.10	21.56	21.79	22.0

Remark:

1. per KDB 941225 D01 v03, The 12.2kbps RMC mode was selected for SAR testing(the primary mode).

2. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤1/4 dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	Verdict
Band12	1.4	23017	1	#0	QPSK	23.51	PASS
Band12	1.4	23017	1	#Mid	QPSK	23.73	PASS
Band12	1.4	23017	1	#Max	QPSK	23.52	PASS
Band12	1.4	23017	3	#0	QPSK	23.61	PASS
Band12	1.4	23017	3	#Max	QPSK	23.58	PASS
Band12	1.4	23017	6	#0	QPSK	22.47	PASS
Band12	1.4	23017	1	#0	QAM16	22.39	PASS
Band12	1.4	23017	1	#Mid	QAM16	22.56	PASS
Band12	1.4	23017	1	#Max	QAM16	22.35	PASS
Band12	1.4	23017	3	#0	QAM16	22.56	PASS
Band12	1.4	23017	3	#Max	QAM16	22.54	PASS
Band12	1.4	23017	6	#0	QAM16	21.46	PASS
Band12	1.4	23095	1	#0	QPSK	23.45	PASS
Band12	1.4	23095	1	#Mid	QPSK	23.7	PASS
Band12	1.4	23095	1	#Max	QPSK	23.45	PASS
Band12	1.4	23095	3	#0	QPSK	23.54	PASS
Band12	1.4	23095	3	#Max	QPSK	23.51	PASS
Band12	1.4	23095	6	#0	QPSK	22.39	PASS
Band12	1.4	23095	1	#0	QAM16	22.48	PASS
Band12	1.4	23095	1	#Mid	QAM16	22.72	PASS
Band12	1.4	23095	1	#Max	QAM16	22.43	PASS
Band12	1.4	23095	3	#0	QAM16	22.72	PASS
Band12	1.4	23095	3	#Max	QAM16	22.79	PASS
Band12	1.4	23095	6	#0	QAM16	21.46	PASS
Band12	1.4	23173	1	#0	QPSK	23.31	PASS
Band12	1.4	23173	1	#Mid	QPSK	23.59	PASS
Band12	1.4	23173	1	#Max	QPSK	23.33	PASS
Band12	1.4	23173	3	#0	QPSK	23.41	PASS
Band12	1.4	23173	3	#Max	QPSK	23.43	PASS
Band12	1.4	23173	6	#0	QPSK	22.4	PASS
Band12	1.4	23173	1	#0	QAM16	22.52	PASS
Band12	1.4	23173	1	#Mid	QAM16	22.75	PASS
Band12	1.4	23173	1	#Max	QAM16	22.59	PASS
Band12	1.4	23173	3	#0	QAM16	22.43	PASS
Band12	1.4	23173	3	#Max	QAM16	22.49	PASS
Band12	1.4	23173	6	#0	QAM16	21.37	PASS
Band12	3	23025	1	#0	QPSK	23.44	PASS
Band12	3	23025	1	#Mid	QPSK	23.41	PASS

Band12	3	23025	1	#Max	QPSK	23.39	PASS
Band12	3	23025	8	#0	QPSK	22.44	PASS
Band12	3	23025	8	#Max	QPSK	22.48	PASS
Band12	3	23025	15	#0	QPSK	22.47	PASS
Band12	3	23025	1	#0	QAM16	22.84	PASS
Band12	3	23025	1	#Mid	QAM16	22.76	PASS
Band12	3	23025	1	#Max	QAM16	22.73	PASS
Band12	3	23025	8	#0	QAM16	21.51	PASS
Band12	3	23025	8	#Max	QAM16	21.56	PASS
Band12	3	23025	15	#0	QAM16	21.5	PASS
Band12	3	23095	1	#0	QPSK	23.4	PASS
Band12	3	23095	1	#Mid	QPSK	23.41	PASS
Band12	3	23095	1	#Max	QPSK	23.4	PASS
Band12	3	23095	8	#0	QPSK	22.39	PASS
Band12	3	23095	8	#Max	QPSK	22.42	PASS
Band12	3	23095	15	#0	QPSK	22.41	PASS
Band12	3	23095	1	#0	QAM16	22.66	PASS
Band12	3	23095	1	#Mid	QAM16	22.64	PASS
Band12	3	23095	1	#Max	QAM16	22.58	PASS
Band12	3	23095	8	#0	QAM16	21.45	PASS
Band12	3	23095	8	#Max	QAM16	21.45	PASS
Band12	3	23095	15	#0	QAM16	21.37	PASS
Band12	3	23165	1	#0	QPSK	23.44	PASS
Band12	3	23165	1	#Mid	QPSK	23.48	PASS
Band12	3	23165	1	#Max	QPSK	23.49	PASS
Band12	3	23165	8	#0	QPSK	22.41	PASS
Band12	3	23165	8	#Max	QPSK	22.39	PASS
Band12	3	23165	15	#0	QPSK	22.38	PASS
Band12	3	23165	1	#0	QAM16	22.27	PASS
Band12	3	23165	1	#Mid	QAM16	22.25	PASS
Band12	3	23165	1	#Max	QAM16	22.31	PASS
Band12	3	23165	8	#0	QAM16	21.46	PASS
Band12	3	23165	8	#Max	QAM16	21.41	PASS
Band12	3	23165	15	#0	QAM16	21.47	PASS
Band12	5	23035	1	#0	QPSK	23.44	PASS
Band12	5	23035	1	#Mid	QPSK	23.43	PASS
Band12	5	23035	1	#Max	QPSK	23.35	PASS
Band12	5	23035	12	#0	QPSK	22.38	PASS
Band12	5	23035	12	#Max	QPSK	22.39	PASS
Band12	5	23035	25	#0	QPSK	22.38	PASS
Band12	5	23035	1	#0	QAM16	22.72	PASS

Band12	5	23035	1	#Mid	QAM16	22.76	PASS
Band12	5	23035	1	#Max	QAM16	22.64	PASS
Band12	5	23035	12	#0	QAM16	21.43	PASS
Band12	5	23035	12	#Max	QAM16	21.4	PASS
Band12	5	23035	25	#0	QAM16	21.49	PASS
Band12	5	23095	1	#0	QPSK	23.33	PASS
Band12	5	23095	1	#Mid	QPSK	23.44	PASS
Band12	5	23095	1	#Max	QPSK	23.25	PASS
Band12	5	23095	12	#0	QPSK	22.48	PASS
Band12	5	23095	12	#Max	QPSK	22.52	PASS
Band12	5	23095	25	#0	QPSK	22.49	PASS
Band12	5	23095	1	#0	QAM16	22.56	PASS
Band12	5	23095	1	#Mid	QAM16	22.67	PASS
Band12	5	23095	1	#Max	QAM16	22.53	PASS
Band12	5	23095	12	#0	QAM16	21.49	PASS
Band12	5	23095	12	#Max	QAM16	21.52	PASS
Band12	5	23095	25	#0	QAM16	21.51	PASS
Band12	5	23155	1	#0	QPSK	23.2	PASS
Band12	5	23155	1	#Mid	QPSK	23.32	PASS
Band12	5	23155	1	#Max	QPSK	23.23	PASS
Band12	5	23155	12	#0	QPSK	22.33	PASS
Band12	5	23155	12	#Max	QPSK	22.26	PASS
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Band12	5	23155	1	#0	QAM16	22.52	PASS
Band12	5	23155	1	#Mid	QAM16	22.65	PASS
Band12	5	23155	1	#Max	QAM16	22.58	PASS
Band12	5	23155	12	#0	QAM16	21.4	PASS
Band12	5	23155	12	#Max	QAM16	21.36	PASS
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Band12	10	23060	1	#Max	QAM16	22.73	PASS
Band12	10	23060	25	#0	QAM16	21.63	PASS
Band12	10	23060	25	#Max	QAM16	21.57	PASS
Band12	10	23060	50	#0	QAM16	21.52	PASS

Band12	10	23095	1	#0	QPSK	23.36	PASS
Band12	10	23095	1	#Mid	QPSK	23.73	PASS
Band12	10	23095	1	#Max	QPSK	23.33	PASS
Band12	10	23095	25	#0	QPSK	22.63	PASS
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Band12	10	23130	1	#Max	QAM16	22.22	PASS
Band12	10	23130	25	#0	QAM16	21.39	PASS
Band12	10	23130	25	#Max	QAM16	21.35	PASS
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Band13	5	23205	1	#0	QPSK	23.89	PASS
Band13	5	23205	1	#Mid	QPSK	24.01	PASS
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Band13	5	23230	1	#0	QPSK	23.77	PASS
Band13	5	23230	1	#Mid	QPSK	23.79	PASS
Band13	5	23230	1	#Max	QPSK	23.52	PASS
Band13	5	23230	12	#0	QPSK	22.74	PASS

Band13	5	23230	12	#Max	QPSK	22.72	PASS
Band13	5	23230	25	#0	QPSK	22.57	PASS
Band13	5	23230	1	#0	QAM16	22.64	PASS
Band13	5	23230	1	#Mid	QAM16	22.69	PASS
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Band13	5	23255	1	#0	QPSK	23.27	PASS
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Band13	5	23255	1	#Max	QPSK	23.27	PASS
Band13	5	23255	12	#0	QPSK	22.43	PASS
Band13	5	23255	12	#Max	QPSK	22.49	PASS
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Band17	5	23755	1	#0	QPSK	23.77	PASS
Band17	5	23755	1	#Mid	QPSK	23.84	PASS
Band17	5	23755	1	#Max	QPSK	23.82	PASS
Band17	5	23755	12	#0	QPSK	22.98	PASS
Band17	5	23755	12	#Max	QPSK	22.93	PASS
Band17	5	23755	25	#0	QPSK	22.99	PASS
Band17	5	23755	1	#0	QAM16	22.89	PASS
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Band17	5	23755	1	#Max	QAM16	22.73	PASS
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Band17	5	23755	12	#Max	QAM16	21.44	PASS
Band17	5	23755	25	#0	QAM16	21.53	PASS
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Band17	10	23780	25	#Max	QAM16	21.69	PASS
Band17	10	23780	50	#0	QAM16	21.6	PASS
Band17	10	23790	1	#0	QPSK	23.33	PASS

Band17	10	23790	1	#Mid	QPSK	23.55	PASS
Band17	10	23790	1	#Max	QPSK	23.27	PASS
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Band17	10	23800	1	#0	QAM16	22.2	PASS
Band17	10	23800	1	#Mid	QAM16	22.41	PASS
Band17	10	23800	1	#Max	QAM16	22.19	PASS
Band17	10	23800	25	#0	QAM16	21.37	PASS
Band17	10	23800	25	#Max	QAM16	21.29	PASS
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Band2	1.4	18607	1	#Max	QAM16	22.62	PASS
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Band2	1.4	18607	6	#0	QAM16	21.71	PASS
Band2	1.4	18900	1	#0	QPSK	23.53	PASS
Band2	1.4	18900	1	#Mid	QPSK	23.72	PASS
Band2	1.4	18900	1	#Max	QPSK	23.53	PASS
Band2	1.4	18900	3	#0	QPSK	23.6	PASS
Band2	1.4	18900	3	#Max	QPSK	23.55	PASS

Band2	1.4	18900	6	#0	QPSK	22.63	PASS
Band2	1.4	18900	1	#0	QAM16	22.63	PASS
Band2	1.4	18900	1	#Mid	QAM16	22.8	PASS
Band2	1.4	18900	1	#Max	QAM16	22.68	PASS
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Band2	1.4	19193	1	#0	QPSK	23.86	PASS
Band2	1.4	19193	1	#Mid	QPSK	24.06	PASS
Band2	1.4	19193	1	#Max	QPSK	23.89	PASS
Band2	1.4	19193	3	#0	QPSK	23.7	PASS
Band2	1.4	19193	3	#Max	QPSK	23.65	PASS
Band2	1.4	19193	6	#0	QPSK	22.83	PASS
Band2	1.4	19193	1	#0	QAM16	22.53	PASS
Band2	1.4	19193	1	#Mid	QAM16	22.64	PASS
Band2	1.4	19193	1	#Max	QAM16	22.53	PASS
Band2	1.4	19193	3	#0	QAM16	22.58	PASS
Band2	1.4	19193	3	#Max	QAM16	22.54	PASS
Band2	1.4	19193	6	#0	QAM16	21.69	PASS
Band2	3	18615	1	#0	QPSK	23.68	PASS
Band2	3	18615	1	#Mid	QPSK	23.66	PASS
Band2	3	18615	1	#Max	QPSK	23.64	PASS
Band2	3	18615	8	#0	QPSK	22.71	PASS
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Band2	3	18615	1	#0	QAM16	22.92	PASS
Band2	3	18615	1	#Mid	QAM16	22.87	PASS
Band2	3	18615	1	#Max	QAM16	22.84	PASS
Band2	3	18615	8	#0	QAM16	21.72	PASS
Band2	3	18615	8	#Max	QAM16	21.74	PASS
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Band2	3	18900	1	#0	QPSK	23.6	PASS
Band2	3	18900	1	#Mid	QPSK	23.59	PASS
Band2	3	18900	1	#Max	QPSK	23.62	PASS
Band2	3	18900	8	#0	QPSK	22.61	PASS
Band2	3	18900	8	#Max	QPSK	22.64	PASS
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Band2	3	18900	1	#0	QAM16	22.74	PASS
Band2	3	18900	1	#Mid	QAM16	22.69	PASS
Band2	3	18900	1	#Max	QAM16	22.71	PASS
Band2	3	18900	8	#0	QAM16	21.6	PASS

Band2	3	18900	8	#Max	QAM16	21.62	PASS
Band2	3	18900	15	#0	QAM16	21.48	PASS
Band2	3	19185	1	#0	QPSK	23.87	PASS
Band2	3	19185	1	#Mid	QPSK	23.95	PASS
Band2	3	19185	1	#Max	QPSK	24	PASS
Band2	3	19185	8	#0	QPSK	22.81	PASS
Band2	3	19185	8	#Max	QPSK	22.82	PASS
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Band2	5	18900	1	#Max	QPSK	23.62	PASS
Band2	5	18900	12	#0	QPSK	22.61	PASS
Band2	5	18900	12	#Max	QPSK	22.66	PASS
Band2	5	18900	25	#0	QPSK	22.63	PASS
Band2	5	18900	1	#0	QAM16	22.68	PASS
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Band2	5	18900	1	#Max	QAM16	22.7	PASS
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Band2	5	19175	1	#0	QPSK	23.59	PASS
Band2	5	19175	1	#Mid	QPSK	23.78	PASS
Band2	5	19175	1	#Max	QPSK	23.72	PASS

Band2	5	19175	12	#0	QPSK	22.71	PASS
Band2	5	19175	12	#Max	QPSK	22.7	PASS
Band2	5	19175	25	#0	QPSK	22.72	PASS
Band2	5	19175	1	#0	QAM16	22.83	PASS
Band2	5	19175	1	#Mid	QAM16	22.93	PASS
Band2	5	19175	1	#Max	QAM16	22.78	PASS
Band2	5	19175	12	#0	QAM16	21.74	PASS
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Band2	10	18650	25	#Max	QPSK	22.68	PASS
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Band2	10	18650	50	#0	QAM16	21.69	PASS
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Band2	10	19150	1	#0	QPSK	23.89	PASS
Band2	10	19150	1	#Mid	QPSK	23.99	PASS
Band2	10	19150	1	#Max	QPSK	23.93	PASS
Band2	10	19150	25	#0	QPSK	22.78	PASS
Band2	10	19150	25	#Max	QPSK	22.75	PASS
Band2	10	19150	50	#0	QPSK	22.75	PASS
Band2	10	19150	1	#0	QAM16	22.58	PASS
Band2	10	19150	1	#Mid	QAM16	22.64	PASS

Band2	10	19150	1	#Max	QAM16	22.52	PASS
Band2	10	19150	25	#0	QAM16	21.8	PASS
Band2	10	19150	25	#Max	QAM16	21.78	PASS
Band2	10	19150	50	#0	QAM16	21.78	PASS
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Band2	15	18675	75	#0	QPSK	22.74	PASS
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Band2	15	18675	1	#Max	QAM16	22.63	PASS
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Band2	15	18900	1	#0	QPSK	23.46	PASS
Band2	15	18900	1	#Mid	QPSK	23.63	PASS
Band2	15	18900	1	#Max	QPSK	23.62	PASS
Band2	15	18900	36	#0	QPSK	22.7	PASS
Band2	15	18900	36	#Max	QPSK	22.81	PASS
Band2	15	18900	75	#0	QPSK	22.78	PASS
Band2	15	18900	1	#0	QAM16	22.6	PASS
Band2	15	18900	1	#Mid	QAM16	22.73	PASS
Band2	15	18900	1	#Max	QAM16	22.67	PASS
Band2	15	18900	36	#0	QAM16	21.66	PASS
Band2	15	18900	36	#Max	QAM16	21.71	PASS
Band2	15	18900	75	#0	QAM16	21.74	PASS
Band2	15	19125	1	#0	QPSK	23.88	PASS
Band2	15	19125	1	#Mid	QPSK	23.89	PASS
Band2	15	19125	1	#Max	QPSK	23.85	PASS
Band2	15	19125	36	#0	QPSK	22.93	PASS
Band2	15	19125	36	#Max	QPSK	22.88	PASS
Band2	15	19125	75	#0	QPSK	22.92	PASS
Band2	15	19125	1	#0	QAM16	22.6	PASS
Band2	15	19125	1	#Mid	QAM16	22.71	PASS
Band2	15	19125	1	#Max	QAM16	22.56	PASS
Band2	15	19125	36	#0	QAM16	21.83	PASS
Band2	15	19125	36	#Max	QAM16	21.81	PASS
Band2	15	19125	75	#0	QAM16	21.85	PASS
Band2	20	18700	1	#0	QPSK	23.47	PASS

Band2	20	18700	1	#Mid	QPSK	23.79	PASS
Band2	20	18700	1	#Max	QPSK	23.34	PASS
Band2	20	18700	50	#0	QPSK	22.6	PASS
Band2	20	18700	50	#Max	QPSK	22.51	PASS
Band2	20	18700	100	#0	QPSK	22.53	PASS
Band2	20	18700	1	#0	QAM16	22.6	PASS
Band2	20	18700	1	#Mid	QAM16	22.9	PASS
Band2	20	18700	1	#Max	QAM16	22.44	PASS
Band2	20	18700	50	#0	QAM16	21.63	PASS
Band2	20	18700	50	#Max	QAM16	21.56	PASS
Band2	20	18700	100	#0	QAM16	21.57	PASS
Band2	20	18900	1	#0	QPSK	23.42	PASS
Band2	20	18900	1	#Mid	QPSK	23.82	PASS
Band2	20	18900	1	#Max	QPSK	23.64	PASS
Band2	20	18900	50	#0	QPSK	22.51	PASS
Band2	20	18900	50	#Max	QPSK	22.59	PASS
Band2	20	18900	100	#0	QPSK	22.56	PASS
Band2	20	18900	1	#0	QAM16	22.19	PASS
Band2	20	18900	1	#Mid	QAM16	22.58	PASS
Band2	20	18900	1	#Max	QAM16	22.28	PASS
Band2	20	18900	50	#0	QAM16	21.54	PASS
Band2	20	18900	50	#Max	QAM16	21.57	PASS
Band2	20	18900	100	#0	QAM16	21.6	PASS
Band2	20	19100	1	#0	QPSK	23.61	PASS
Band2	20	19100	1	#Mid	QPSK	23.93	PASS
Band2	20	19100	1	#Max	QPSK	23.58	PASS
Band2	20	19100	50	#0	QPSK	22.79	PASS
Band2	20	19100	50	#Max	QPSK	22.65	PASS
Band2	20	19100	100	#0	QPSK	22.73	PASS
Band2	20	19100	1	#0	QAM16	22.18	PASS
Band2	20	19100	1	#Mid	QAM16	22.54	PASS
Band2	20	19100	1	#Max	QAM16	22.16	PASS
Band2	20	19100	50	#0	QAM16	21.81	PASS
Band2	20	19100	50	#Max	QAM16	21.73	PASS
Band2	20	19100	100	#0	QAM16	21.72	PASS
Band4	1.4	19957	1	#0	QPSK	24.05	PASS
Band4	1.4	19957	1	#Mid	QPSK	24.29	PASS
Band4	1.4	19957	1	#Max	QPSK	24.07	PASS
Band4	1.4	19957	3	#0	QPSK	24.09	PASS
Band4	1.4	19957	3	#Max	QPSK	24.06	PASS

Band4	1.4	19957	6	#0	QPSK	23.05	PASS
Band4	1.4	19957	1	#0	QAM16	22.85	PASS
Band4	1.4	19957	1	#Mid	QAM16	22.98	PASS
Band4	1.4	19957	1	#Max	QAM16	22.88	PASS
Band4	1.4	19957	3	#0	QAM16	22.98	PASS
Band4	1.4	19957	3	#Max	QAM16	22.99	PASS
Band4	1.4	19957	6	#0	QAM16	22.03	PASS
Band4	1.4	20175	1	#0	QPSK	23.95	PASS
Band4	1.4	20175	1	#Mid	QPSK	24.18	PASS
Band4	1.4	20175	1	#Max	QPSK	23.95	PASS
Band4	1.4	20175	3	#0	QPSK	23.95	PASS
Band4	1.4	20175	3	#Max	QPSK	23.94	PASS
Band4	1.4	20175	6	#0	QPSK	22.9	PASS
Band4	1.4	20175	1	#0	QAM16	22.83	PASS
Band4	1.4	20175	1	#Mid	QAM16	23.07	PASS
Band4	1.4	20175	1	#Max	QAM16	22.85	PASS
Band4	1.4	20175	3	#0	QAM16	23.05	PASS
Band4	1.4	20175	3	#Max	QAM16	23.07	PASS
Band4	1.4	20175	6	#0	QAM16	21.93	PASS
Band4	1.4	20393	1	#0	QPSK	23.86	PASS
Band4	1.4	20393	1	#Mid	QPSK	24.05	PASS
Band4	1.4	20393	1	#Max	QPSK	23.84	PASS
Band4	1.4	20393	3	#0	QPSK	23.94	PASS
Band4	1.4	20393	3	#Max	QPSK	23.95	PASS
Band4	1.4	20393	6	#0	QPSK	22.91	PASS
Band4	1.4	20393	1	#0	QAM16	23.01	PASS
Band4	1.4	20393	1	#Mid	QAM16	23.25	PASS
Band4	1.4	20393	1	#Max	QAM16	23.01	PASS
Band4	1.4	20393	3	#0	QAM16	22.91	PASS
Band4	1.4	20393	3	#Max	QAM16	22.93	PASS
Band4	1.4	20393	6	#0	QAM16	21.88	PASS
Band4	3	19965	1	#0	QPSK	24.01	PASS
Band4	3	19965	1	#Mid	QPSK	23.95	PASS
Band4	3	19965	1	#Max	QPSK	23.97	PASS
Band4	3	19965	8	#0	QPSK	23.02	PASS
Band4	3	19965	8	#Max	QPSK	23.04	PASS
Band4	3	19965	15	#0	QPSK	23	PASS
Band4	3	19965	1	#0	QAM16	23.26	PASS
Band4	3	19965	1	#Mid	QAM16	23.2	PASS
Band4	3	19965	1	#Max	QAM16	23.26	PASS
Band4	3	19965	8	#0	QAM16	22.04	PASS

Band4	3	19965	8	#Max	QAM16	22.08	PASS
Band4	3	19965	15	#0	QAM16	22.01	PASS
Band4	3	20175	1	#0	QPSK	23.94	PASS
Band4	3	20175	1	#Mid	QPSK	23.91	PASS
Band4	3	20175	1	#Max	QPSK	23.89	PASS
Band4	3	20175	8	#0	QPSK	22.94	PASS
Band4	3	20175	8	#Max	QPSK	22.93	PASS
Band4	3	20175	15	#0	QPSK	22.89	PASS
Band4	3	20175	1	#0	QAM16	23.09	PASS
Band4	3	20175	1	#Mid	QAM16	22.98	PASS
Band4	3	20175	1	#Max	QAM16	23.05	PASS
Band4	3	20175	8	#0	QAM16	21.96	PASS
Band4	3	20175	8	#Max	QAM16	21.95	PASS
Band4	3	20175	15	#0	QAM16	21.83	PASS
Band4	3	20385	1	#0	QPSK	23.98	PASS
Band4	3	20385	1	#Mid	QPSK	24.05	PASS
Band4	3	20385	1	#Max	QPSK	24.08	PASS
Band4	3	20385	8	#0	QPSK	22.97	PASS
Band4	3	20385	8	#Max	QPSK	22.95	PASS
Band4	3	20385	15	#0	QPSK	22.91	PASS
Band4	3	20385	1	#0	QAM16	22.79	PASS
Band4	3	20385	1	#Mid	QAM16	22.74	PASS
Band4	3	20385	1	#Max	QAM16	22.71	PASS
Band4	3	20385	8	#0	QAM16	21.87	PASS
Band4	3	20385	8	#Max	QAM16	21.87	PASS
Band4	3	20385	15	#0	QAM16	21.88	PASS
Band4	5	19975	1	#0	QPSK	23.96	PASS
Band4	5	19975	1	#Mid	QPSK	23.94	PASS
Band4	5	19975	1	#Max	QPSK	23.86	PASS
Band4	5	19975	12	#0	QPSK	22.87	PASS
Band4	5	19975	12	#Max	QPSK	22.89	PASS
Band4	5	19975	25	#0	QPSK	22.73	PASS
Band4	5	19975	1	#0	QAM16	22.99	PASS
Band4	5	19975	1	#Mid	QAM16	22.98	PASS
Band4	5	19975	1	#Max	QAM16	22.98	PASS
Band4	5	19975	12	#0	QAM16	21.93	PASS
Band4	5	19975	12	#Max	QAM16	21.9	PASS
Band4	5	19975	25	#0	QAM16	21.79	PASS
Band4	5	20175	1	#0	QPSK	23.63	PASS
Band4	5	20175	1	#Mid	QPSK	23.68	PASS
Band4	5	20175	1	#Max	QPSK	23.66	PASS

Band4	5	20175	12	#0	QPSK	22.7	PASS
Band4	5	20175	12	#Max	QPSK	22.56	PASS
Band4	5	20175	25	#0	QPSK	22.62	PASS
Band4	5	20175	1	#0	QAM16	22.67	PASS
Band4	5	20175	1	#Mid	QAM16	22.67	PASS
Band4	5	20175	1	#Max	QAM16	22.55	PASS
Band4	5	20175	12	#0	QAM16	21.53	PASS
Band4	5	20175	12	#Max	QAM16	21.47	PASS
Band4	5	20175	25	#0	QAM16	21.49	PASS
Band4	5	20375	1	#0	QPSK	23.34	PASS
Band4	5	20375	1	#Mid	QPSK	23.4	PASS
Band4	5	20375	1	#Max	QPSK	23.31	PASS
Band4	5	20375	12	#0	QPSK	22.46	PASS
Band4	5	20375	12	#Max	QPSK	22.54	PASS
Band4	5	20375	25	#0	QPSK	22.52	PASS
Band4	5	20375	1	#0	QAM16	22.65	PASS
Band4	5	20375	1	#Mid	QAM16	22.7	PASS
Band4	5	20375	1	#Max	QAM16	22.61	PASS
Band4	5	20375	12	#0	QAM16	21.51	PASS
Band4	5	20375	12	#Max	QAM16	21.56	PASS
Band4	5	20375	25	#0	QAM16	21.55	PASS
Band4	10	20000	1	#0	QPSK	23.67	PASS
Band4	10	20000	1	#Mid	QPSK	23.7	PASS
Band4	10	20000	1	#Max	QPSK	23.49	PASS
Band4	10	20000	25	#0	QPSK	22.6	PASS
Band4	10	20000	25	#Max	QPSK	22.64	PASS
Band4	10	20000	50	#0	QPSK	22.62	PASS
Band4	10	20000	1	#0	QAM16	22.82	PASS
Band4	10	20000	1	#Mid	QAM16	22.94	PASS
Band4	10	20000	1	#Max	QAM16	22.78	PASS
Band4	10	20000	25	#0	QAM16	21.7	PASS
Band4	10	20000	25	#Max	QAM16	21.7	PASS
Band4	10	20000	50	#0	QAM16	21.62	PASS
Band4	10	20175	1	#0	QPSK	23.44	PASS
Band4	10	20175	1	#Mid	QPSK	23.58	PASS
Band4	10	20175	1	#Max	QPSK	23.38	PASS
Band4	10	20175	25	#0	QPSK	22.58	PASS
Band4	10	20175	25	#Max	QPSK	22.5	PASS
Band4	10	20175	50	#0	QPSK	22.52	PASS
Band4	10	20175	1	#0	QAM16	22.63	PASS
Band4	10	20175	1	#Mid	QAM16	22.73	PASS

Band4	10	20175	1	#Max	QAM16	22.6	PASS
Band4	10	20175	25	#0	QAM16	21.61	PASS
Band4	10	20175	25	#Max	QAM16	21.5	PASS
Band4	10	20175	50	#0	QAM16	21.5	PASS
Band4	10	20350	1	#0	QPSK	23.52	PASS
Band4	10	20350	1	#Mid	QPSK	23.64	PASS
Band4	10	20350	1	#Max	QPSK	23.52	PASS
Band4	10	20350	25	#0	QPSK	22.5	PASS
Band4	10	20350	25	#Max	QPSK	22.58	PASS
Band4	10	20350	50	#0	QPSK	22.52	PASS
Band4	10	20350	1	#0	QAM16	22.34	PASS
Band4	10	20350	1	#Mid	QAM16	22.54	PASS
Band4	10	20350	1	#Max	QAM16	22.35	PASS
Band4	10	20350	25	#0	QAM16	21.55	PASS
Band4	10	20350	25	#Max	QAM16	21.6	PASS
Band4	10	20350	50	#0	QAM16	21.56	PASS
Band4	15	20025	1	#0	QPSK	23.39	PASS
Band4	15	20025	1	#Mid	QPSK	23.45	PASS
Band4	15	20025	1	#Max	QPSK	23.32	PASS
Band4	15	20025	36	#0	QPSK	22.62	PASS
Band4	15	20025	36	#Max	QPSK	22.62	PASS
Band4	15	20025	75	#0	QPSK	22.63	PASS
Band4	15	20025	1	#0	QAM16	22.7	PASS
Band4	15	20025	1	#Mid	QAM16	22.78	PASS
Band4	15	20025	1	#Max	QAM16	22.63	PASS
Band4	15	20025	36	#0	QAM16	21.56	PASS
Band4	15	20025	36	#Max	QAM16	21.6	PASS
Band4	15	20025	75	#0	QAM16	21.62	PASS
Band4	15	20175	1	#0	QPSK	23.35	PASS
Band4	15	20175	1	#Mid	QPSK	23.43	PASS
Band4	15	20175	1	#Max	QPSK	23.28	PASS
Band4	15	20175	36	#0	QPSK	22.59	PASS
Band4	15	20175	36	#Max	QPSK	22.53	PASS
Band4	15	20175	75	#0	QPSK	22.58	PASS
Band4	15	20175	1	#0	QAM16	22.57	PASS
Band4	15	20175	1	#Mid	QAM16	22.62	PASS
Band4	15	20175	1	#Max	QAM16	22.52	PASS
Band4	15	20175	36	#0	QAM16	21.53	PASS
Band4	15	20175	36	#Max	QAM16	21.48	PASS
Band4	15	20175	75	#0	QAM16	21.51	PASS
Band4	15	20325	1	#0	QPSK	23.36	PASS

Band4	15	20325	1	#Mid	QPSK	23.51	PASS
Band4	15	20325	1	#Max	QPSK	23.45	PASS
Band4	15	20325	36	#0	QPSK	22.54	PASS
Band4	15	20325	36	#Max	QPSK	22.61	PASS
Band4	15	20325	75	#0	QPSK	22.61	PASS
Band4	15	20325	1	#0	QAM16	22.38	PASS
Band4	15	20325	1	#Mid	QAM16	22.54	PASS
Band4	15	20325	1	#Max	QAM16	22.4	PASS
Band4	15	20325	36	#0	QAM16	21.5	PASS
Band4	15	20325	36	#Max	QAM16	21.52	PASS
Band4	15	20325	75	#0	QAM16	21.57	PASS
Band4	20	20050	1	#0	QPSK	23.24	PASS
Band4	20	20050	1	#Mid	QPSK	23.67	PASS
Band4	20	20050	1	#Max	QPSK	23.19	PASS
Band4	20	20050	50	#0	QPSK	22.51	PASS
Band4	20	20050	50	#Max	QPSK	22.47	PASS
Band4	20	20050	100	#0	QPSK	22.5	PASS
Band4	20	20050	1	#0	QAM16	22.45	PASS
Band4	20	20050	1	#Mid	QAM16	22.83	PASS
Band4	20	20050	1	#Max	QAM16	22.42	PASS
Band4	20	20050	50	#0	QAM16	21.51	PASS
Band4	20	20050	50	#Max	QAM16	21.52	PASS
Band4	20	20050	100	#0	QAM16	21.53	PASS
Band4	20	20175	1	#0	QPSK	23.25	PASS
Band4	20	20175	1	#Mid	QPSK	23.66	PASS
Band4	20	20175	1	#Max	QPSK	23.26	PASS
Band4	20	20175	50	#0	QPSK	22.52	PASS
Band4	20	20175	50	#Max	QPSK	22.35	PASS
Band4	20	20175	100	#0	QPSK	22.46	PASS
Band4	20	20175	1	#0	QAM16	22.11	PASS
Band4	20	20175	1	#Mid	QAM16	22.51	PASS
Band4	20	20175	1	#Max	QAM16	22.12	PASS
Band4	20	20175	50	#0	QAM16	21.51	PASS
Band4	20	20175	50	#Max	QAM16	21.37	PASS
Band4	20	20175	100	#0	QAM16	21.5	PASS
Band4	20	20300	1	#0	QPSK	23.13	PASS
Band4	20	20300	1	#Mid	QPSK	23.6	PASS
Band4	20	20300	1	#Max	QPSK	23.21	PASS
Band4	20	20300	50	#0	QPSK	22.49	PASS
Band4	20	20300	50	#Max	QPSK	22.52	PASS
Band4	20	20300	100	#0	QPSK	22.52	PASS

Band4	20	20300	1	#0	QAM16	21.91	PASS
Band4	20	20300	1	#Mid	QAM16	22.39	PASS
Band4	20	20300	1	#Max	QAM16	22.03	PASS
Band4	20	20300	50	#0	QAM16	21.52	PASS
Band4	20	20300	50	#Max	QAM16	21.61	PASS
Band4	20	20300	100	#0	QAM16	21.54	PASS
Band41a	5	40265	1	#0	QPSK	23	PASS
Band41a	5	40265	1	#Mid	QPSK	24.11	PASS
Band41a	5	40265	1	#Max	QPSK	23.94	PASS
Band41a	5	40265	12	#0	QPSK	23.01	PASS
Band41a	5	40265	12	#Max	QPSK	23.02	PASS
Band41a	5	40265	25	#0	QPSK	23.01	PASS
Band41a	5	40265	1	#0	QAM16	23.13	PASS
Band41a	5	40265	1	#Mid	QAM16	23.27	PASS
Band41a	5	40265	1	#Max	QAM16	23.17	PASS
Band41a	5	40265	12	#0	QAM16	22	PASS
Band41a	5	40265	12	#Max	QAM16	22.23	PASS
Band41a	5	40265	25	#0	QAM16	22.36	PASS
Band41a	5	40740	1	#0	QPSK	24.01	PASS
Band41a	5	40740	1	#Mid	QPSK	24.1	PASS
Band41a	5	40740	1	#Max	QPSK	24.02	PASS
Band41a	5	40740	12	#0	QPSK	23.08	PASS
Band41a	5	40740	12	#Max	QPSK	23.15	PASS
Band41a	5	40740	25	#0	QPSK	23.13	PASS
Band41a	5	40740	1	#0	QAM16	23.18	PASS
Band41a	5	40740	1	#Mid	QAM16	23.26	PASS
Band41a	5	40740	1	#Max	QAM16	23.17	PASS
Band41a	5	40740	12	#0	QAM16	22.03	PASS
Band41a	5	40740	12	#Max	QAM16	22.08	PASS
Band41a	5	40740	25	#0	QAM16	22.1	PASS
Band41a	5	41215	1	#0	QPSK	23.94	PASS
Band41a	5	41215	1	#Mid	QPSK	24.09	PASS
Band41a	5	41215	1	#Max	QPSK	23.96	PASS
Band41a	5	41215	12	#0	QPSK	23.11	PASS
Band41a	5	41215	12	#Max	QPSK	23.14	PASS
Band41a	5	41215	25	#0	QPSK	23.14	PASS
Band41a	5	41215	1	#0	QAM16	23.28	PASS
Band41a	5	41215	1	#Mid	QAM16	23.4	PASS
Band41a	5	41215	1	#Max	QAM16	23.24	PASS
Band41a	5	41215	12	#0	QAM16	22.13	PASS

Band41a	5	41215	12	#Max	QAM16	22.16	PASS
Band41a	5	41215	25	#0	QAM16	22.14	PASS
Band41a	10	40290	1	#0	QPSK	24.18	PASS
Band41a	10	40290	1	#Mid	QPSK	24.32	PASS
Band41a	10	40290	1	#Max	QPSK	24.05	PASS
Band41a	10	40290	25	#0	QPSK	23.15	PASS
Band41a	10	40290	25	#Max	QPSK	23.1	PASS
Band41a	10	40290	50	#0	QPSK	23.05	PASS
Band41a	10	40290	1	#0	QAM16	23.24	PASS
Band41a	10	40290	1	#Mid	QAM16	23.47	PASS
Band41a	10	40290	1	#Max	QAM16	23.32	PASS
Band41a	10	40290	25	#0	QAM16	22.12	PASS
Band41a	10	40290	25	#Max	QAM16	22.14	PASS
Band41a	10	40290	50	#0	QAM16	22.03	PASS
Band41a	10	40740	1	#0	QPSK	24.08	PASS
Band41a	10	40740	1	#Mid	QPSK	24.28	PASS
Band41a	10	40740	1	#Max	QPSK	24.07	PASS
Band41a	10	40740	25	#0	QPSK	23.1	PASS
Band41a	10	40740	25	#Max	QPSK	23.19	PASS
Band41a	10	40740	50	#0	QPSK	23.15	PASS
Band41a	10	40740	1	#0	QAM16	23.12	PASS
Band41a	10	40740	1	#Mid	QAM16	23.32	PASS
Band41a	10	40740	1	#Max	QAM16	23.09	PASS
Band41a	10	40740	25	#0	QAM16	22.12	PASS
Band41a	10	40740	25	#Max	QAM16	22.2	PASS
Band41a	10	40740	50	#0	QAM16	22.12	PASS
Band41a	10	41190	1	#0	QPSK	24.13	PASS
Band41a	10	41190	1	#Mid	QPSK	24.33	PASS
Band41a	10	41190	1	#Max	QPSK	24.14	PASS
Band41a	10	41190	25	#0	QPSK	23.17	PASS
Band41a	10	41190	25	#Max	QPSK	23.18	PASS
Band41a	10	41190	50	#0	QPSK	23.19	PASS
Band41a	10	41190	1	#0	QAM16	23.03	PASS
Band41a	10	41190	1	#Mid	QAM16	23.16	PASS
Band41a	10	41190	1	#Max	QAM16	22.92	PASS
Band41a	10	41190	25	#0	QAM16	22.17	PASS
Band41a	10	41190	25	#Max	QAM16	22.18	PASS
Band41a	10	41190	50	#0	QAM16	22.19	PASS
Band41a	15	40315	1	#0	QPSK	24.28	PASS
Band41a	15	40315	1	#Mid	QPSK	24.26	PASS
Band41a	15	40315	1	#Max	QPSK	24.09	PASS

Band41a	15	40315	36	#0	QPSK	23.27	PASS
Band41a	15	40315	36	#Max	QPSK	23.13	PASS
Band41a	15	40315	75	#0	QPSK	23.19	PASS
Band41a	15	40315	1	#0	QAM16	22.96	PASS
Band41a	15	40315	1	#Mid	QAM16	23.1	PASS
Band41a	15	40315	1	#Max	QAM16	23.03	PASS
Band41a	15	40315	36	#0	QAM16	22.11	PASS
Band41a	15	40315	36	#Max	QAM16	22.04	PASS
Band41a	15	40315	75	#0	QAM16	22.11	PASS
Band41a	15	40740	1	#0	QPSK	23.98	PASS
Band41a	15	40740	1	#Mid	QPSK	24.04	PASS
Band41a	15	40740	1	#Max	QPSK	23.95	PASS
Band41a	15	40740	36	#0	QPSK	23.12	PASS
Band41a	15	40740	36	#Max	QPSK	23.22	PASS
Band41a	15	40740	75	#0	QPSK	23.23	PASS
Band41a	15	40740	1	#0	QAM16	23.36	PASS
Band41a	15	40740	1	#Mid	QAM16	23.41	PASS
Band41a	15	40740	1	#Max	QAM16	23.28	PASS
Band41a	15	40740	36	#0	QAM16	22.11	PASS
Band41a	15	40740	36	#Max	QAM16	22.17	PASS
Band41a	15	40740	75	#0	QAM16	22.18	PASS
Band41a	15	41165	1	#0	QPSK	24.07	PASS
Band41a	15	41165	1	#Mid	QPSK	24.15	PASS
Band41a	15	41165	1	#Max	QPSK	24.04	PASS
Band41a	15	41165	36	#0	QPSK	23.2	PASS
Band41a	15	41165	36	#Max	QPSK	23.31	PASS
Band41a	15	41165	75	#0	QPSK	23.31	PASS
Band41a	15	41165	1	#0	QAM16	23.07	PASS
Band41a	15	41165	1	#Mid	QAM16	23.19	PASS
Band41a	15	41165	1	#Max	QAM16	23.05	PASS
Band41a	15	41165	36	#0	QAM16	22.17	PASS
Band41a	15	41165	36	#Max	QAM16	22.21	PASS
Band41a	15	41165	75	#0	QAM16	22.21	PASS
Band41a	20	40340	1	#0	QPSK	23.93	PASS
Band41a	20	40340	1	#Mid	QPSK	24.21	PASS
Band41a	20	40340	1	#Max	QPSK	23.78	PASS
Band41a	20	40340	50	#0	QPSK	23.04	PASS
Band41a	20	40340	50	#Max	QPSK	22.97	PASS
Band41a	20	40340	100	#0	QPSK	23.02	PASS
Band41a	20	40340	1	#0	QAM16	22.88	PASS
Band41a	20	40340	1	#Mid	QAM16	23.31	PASS

Band41a	20	40340	1	#Max	QAM16	22.96	PASS
Band41a	20	40340	50	#0	QAM16	22.06	PASS
Band41a	20	40340	50	#Max	QAM16	21.96	PASS
Band41a	20	40340	100	#0	QAM16	21.98	PASS
Band41a	20	40740	1	#0	QPSK	23.86	PASS
Band41a	20	40740	1	#Mid	QPSK	24.27	PASS
Band41a	20	40740	1	#Max	QPSK	23.87	PASS
Band41a	20	40740	50	#0	QPSK	23.02	PASS
Band41a	20	40740	50	#Max	QPSK	23.14	PASS
Band41a	20	40740	100	#0	QPSK	23.11	PASS
Band41a	20	40740	1	#0	QAM16	22.86	PASS
Band41a	20	40740	1	#Mid	QAM16	23.16	PASS
Band41a	20	40740	1	#Max	QAM16	22.8	PASS
Band41a	20	40740	50	#0	QAM16	21.98	PASS
Band41a	20	40740	50	#Max	QAM16	22.11	PASS
Band41a	20	40740	100	#0	QAM16	22.12	PASS
Band41a	20	41140	1	#0	QPSK	23.89	PASS
Band41a	20	41140	1	#Mid	QPSK	24.36	PASS
Band41a	20	41140	1	#Max	QPSK	23.94	PASS
Band41a	20	41140	50	#0	QPSK	23.14	PASS
Band41a	20	41140	50	#Max	QPSK	23.2	PASS
Band41a	20	41140	100	#0	QPSK	23.15	PASS
Band41a	20	41140	1	#0	QAM16	22.53	PASS
Band41a	20	41140	1	#Mid	QAM16	22.97	PASS
Band41a	20	41140	1	#Max	QAM16	22.53	PASS
Band41a	20	41140	50	#0	QAM16	22.19	PASS
Band41a	20	41140	50	#Max	QAM16	22.25	PASS
Band41a	20	41140	100	#0	QAM16	22.19	PASS
Band7	5	20775	1	#0	QPSK	23.69	PASS
Band7	5	20775	1	#Mid	QPSK	23.76	PASS
Band7	5	20775	1	#Max	QPSK	23.65	PASS
Band7	5	20775	12	#0	QPSK	22.55	PASS
Band7	5	20775	12	#Max	QPSK	22.3	PASS
Band7	5	20775	25	#0	QPSK	22.22	PASS
Band7	5	20775	1	#0	QAM16	22.29	PASS
Band7	5	20775	1	#Mid	QAM16	22.42	PASS
Band7	5	20775	1	#Max	QAM16	22.35	PASS
Band7	5	20775	12	#0	QAM16	21.14	PASS
Band7	5	20775	12	#Max	QAM16	21.12	PASS
Band7	5	20775	25	#0	QAM16	21.23	PASS

Band7	5	21100	1	#0	QPSK	23.36	PASS
Band7	5	21100	1	#Mid	QPSK	23.53	PASS
Band7	5	21100	1	#Max	QPSK	23.42	PASS
Band7	5	21100	12	#0	QPSK	22.38	PASS
Band7	5	21100	12	#Max	QPSK	22.33	PASS
Band7	5	21100	25	#0	QPSK	22.34	PASS
Band7	5	21100	1	#0	QAM16	22.31	PASS
Band7	5	21100	1	#Mid	QAM16	22.47	PASS
Band7	5	21100	1	#Max	QAM16	22.37	PASS
Band7	5	21100	12	#0	QAM16	21.25	PASS
Band7	5	21100	12	#Max	QAM16	21.23	PASS
Band7	5	21100	25	#0	QAM16	21.22	PASS
Band7	5	21425	1	#0	QPSK	23.29	PASS
Band7	5	21425	1	#Mid	QPSK	23.38	PASS
Band7	5	21425	1	#Max	QPSK	23.21	PASS
Band7	5	21425	12	#0	QPSK	22.42	PASS
Band7	5	21425	12	#Max	QPSK	22.33	PASS
Band7	5	21425	25	#0	QPSK	22.39	PASS
Band7	5	21425	1	#0	QAM16	22.5	PASS
Band7	5	21425	1	#Mid	QAM16	22.56	PASS
Band7	5	21425	1	#Max	QAM16	22.45	PASS
Band7	5	21425	12	#0	QAM16	21.42	PASS
Band7	5	21425	12	#Max	QAM16	21.29	PASS
Band7	5	21425	25	#0	QAM16	21.38	PASS
Band7	10	20800	1	#0	QPSK	23.22	PASS
Band7	10	20800	1	#Mid	QPSK	23.37	PASS
Band7	10	20800	1	#Max	QPSK	23.24	PASS
Band7	10	20800	25	#0	QPSK	22.3	PASS
Band7	10	20800	25	#Max	QPSK	22.32	PASS
Band7	10	20800	50	#0	QPSK	22.28	PASS
Band7	10	20800	1	#0	QAM16	22.34	PASS
Band7	10	20800	1	#Mid	QAM16	22.56	PASS
Band7	10	20800	1	#Max	QAM16	22.52	PASS
Band7	10	20800	25	#0	QAM16	21.35	PASS
Band7	10	20800	25	#Max	QAM16	21.39	PASS
Band7	10	20800	50	#0	QAM16	21.26	PASS
Band7	10	21100	1	#0	QPSK	23.4	PASS
Band7	10	21100	1	#Mid	QPSK	23.53	PASS
Band7	10	21100	1	#Max	QPSK	23.44	PASS
Band7	10	21100	25	#0	QPSK	22.46	PASS
Band7	10	21100	25	#Max	QPSK	22.34	PASS

Band7	10	21100	50	#0	QPSK	22.37	PASS
Band7	10	21100	1	#0	QAM16	22.4	PASS
Band7	10	21100	1	#Mid	QAM16	22.59	PASS
Band7	10	21100	1	#Max	QAM16	22.48	PASS
Band7	10	21100	25	#0	QAM16	21.41	PASS
Band7	10	21100	25	#Max	QAM16	21.31	PASS
Band7	10	21100	50	#0	QAM16	21.31	PASS
Band7	10	21400	1	#0	QPSK	23.64	PASS
Band7	10	21400	1	#Mid	QPSK	23.71	PASS
Band7	10	21400	1	#Max	QPSK	23.47	PASS
Band7	10	21400	25	#0	QPSK	22.52	PASS
Band7	10	21400	25	#Max	QPSK	22.39	PASS
Band7	10	21400	50	#0	QPSK	22.44	PASS
Band7	10	21400	1	#0	QAM16	22.36	PASS
Band7	10	21400	1	#Mid	QAM16	22.42	PASS
Band7	10	21400	1	#Max	QAM16	22.22	PASS
Band7	10	21400	25	#0	QAM16	21.48	PASS
Band7	10	21400	25	#Max	QAM16	21.37	PASS
Band7	10	21400	50	#0	QAM16	21.44	PASS
Band7	15	20825	1	#0	QPSK	23.15	PASS
Band7	15	20825	1	#Mid	QPSK	23.23	PASS
Band7	15	20825	1	#Max	QPSK	23.2	PASS
Band7	15	20825	36	#0	QPSK	22.37	PASS
Band7	15	20825	36	#Max	QPSK	22.41	PASS
Band7	15	20825	75	#0	QPSK	22.38	PASS
Band7	15	20825	1	#0	QAM16	22.26	PASS
Band7	15	20825	1	#Mid	QAM16	22.5	PASS
Band7	15	20825	1	#Max	QAM16	22.48	PASS
Band7	15	20825	36	#0	QAM16	21.29	PASS
Band7	15	20825	36	#Max	QAM16	21.37	PASS
Band7	15	20825	75	#0	QAM16	21.34	PASS
Band7	15	21100	1	#0	QPSK	23.3	PASS
Band7	15	21100	1	#Mid	QPSK	23.49	PASS
Band7	15	21100	1	#Max	QPSK	23.35	PASS
Band7	15	21100	36	#0	QPSK	22.63	PASS
Band7	15	21100	36	#Max	QPSK	22.52	PASS
Band7	15	21100	75	#0	QPSK	22.59	PASS
Band7	15	21100	1	#0	QAM16	22.34	PASS
Band7	15	21100	1	#Mid	QAM16	22.48	PASS
Band7	15	21100	1	#Max	QAM16	22.48	PASS
Band7	15	21100	36	#0	QAM16	21.42	PASS

Band7	15	21100	36	#Max	QAM16	21.37	PASS
Band7	15	21100	75	#0	QAM16	21.42	PASS
Band7	15	21375	1	#0	QPSK	23.59	PASS
Band7	15	21375	1	#Mid	QPSK	23.69	PASS
Band7	15	21375	1	#Max	QPSK	23.41	PASS
Band7	15	21375	36	#0	QPSK	22.6	PASS
Band7	15	21375	36	#Max	QPSK	22.57	PASS
Band7	15	21375	75	#0	QPSK	22.58	PASS
Band7	15	21375	1	#0	QAM16	22.52	PASS
Band7	15	21375	1	#Mid	QAM16	22.47	PASS
Band7	15	21375	1	#Max	QAM16	22.26	PASS
Band7	15	21375	36	#0	QAM16	21.5	PASS
Band7	15	21375	36	#Max	QAM16	21.46	PASS
Band7	15	21375	75	#0	QAM16	21.51	PASS
Band7	20	20850	1	#0	QPSK	22.96	PASS
Band7	20	20850	1	#Mid	QPSK	23.41	PASS
Band7	20	20850	1	#Max	QPSK	23.07	PASS
Band7	20	20850	50	#0	QPSK	22.26	PASS
Band7	20	20850	50	#Max	QPSK	22.45	PASS
Band7	20	20850	100	#0	QPSK	22.36	PASS
Band7	20	20850	1	#0	QAM16	22.05	PASS
Band7	20	20850	1	#Mid	QAM16	22.58	PASS
Band7	20	20850	1	#Max	QAM16	22.25	PASS
Band7	20	20850	50	#0	QAM16	21.28	PASS
Band7	20	20850	50	#Max	QAM16	21.46	PASS
Band7	20	20850	100	#0	QAM16	21.34	PASS
Band7	20	21100	1	#0	QPSK	23.25	PASS
Band7	20	21100	1	#Mid	QPSK	23.71	PASS
Band7	20	21100	1	#Max	QPSK	23.39	PASS
Band7	20	21100	50	#0	QPSK	22.4	PASS
Band7	20	21100	50	#Max	QPSK	22.3	PASS
Band7	20	21100	100	#0	QPSK	22.35	PASS
Band7	20	21100	1	#0	QAM16	21.96	PASS
Band7	20	21100	1	#Mid	QAM16	22.4	PASS
Band7	20	21100	1	#Max	QAM16	22.12	PASS
Band7	20	21100	50	#0	QAM16	21.32	PASS
Band7	20	21100	50	#Max	QAM16	21.21	PASS
Band7	20	21100	100	#0	QAM16	21.29	PASS
Band7	20	21350	1	#0	QPSK	23.36	PASS
Band7	20	21350	1	#Mid	QPSK	23.74	PASS
Band7	20	21350	1	#Max	QPSK	23.18	PASS

Band7	20	21350	50	#0	QPSK	22.44	PASS
Band7	20	21350	50	#Max	QPSK	22.41	PASS
Band7	20	21350	100	#0	QPSK	22.44	PASS
Band7	20	21350	1	#0	QAM16	22.11	PASS
Band7	20	21350	1	#Mid	QAM16	22.37	PASS
Band7	20	21350	1	#Max	QAM16	21.9	PASS
Band7	20	21350	50	#0	QAM16	21.46	PASS
Band7	20	21350	50	#Max	QAM16	21.45	PASS
Band7	20	21350	100	#0	QAM16	21.44	PASS

Remark:

1. Per KDB941225 D05 v02r05, Start with the largest channel bandwidth then measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle, and lower edge of each required test channel. When the reported SAR is≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. 6 When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.
2. Per KDB941225 D05 v02r05, The procedures required for 1 RB allocation in 5.2.1 are applied to measure the SAR for QPSK with 50% RB allocation.
3. Per KDB941225 D05 v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations, and the highest reported SAR for 1 RB and 50% RB allocation in 5.2.1 and 5.2.2 are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB941225 D05 v02r05, For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in 5.2.1, 5.2.2, and 5.2.3 to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

WLAN(2.4G) - Maximum Average Power					
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**	**Tune-up power (dBm)**
802.11b	1Mbps	CH 01	2412	7.337	7.5
		CH 06	2437	7.51	7.5
		CH 11	2462	7.193	7.5
802.11g	6Mbps	CH 01	2412	6.718	7.0
		CH 06	2437	6.945	7.0
		CH 11	2462	6.678	7.0
802.11n (20MHz)	MCS0	CH 01	2412	6.699	7.0
		CH 06	2437	6.862	7.0
		CH 11	2462	6.601	7.0
802.11n (40MHz)	MCS0	CH 03	2422	7.053	7.5
		CH 06	2437	7.115	7.5
		CH 09	2452	7.0	7.5

WLAN(5.2G) – Conducted Power				
Test Mode	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**	**Tune-up power (dBm)**
802.11a	CH 36	5180	7.063	7.5
	CH 40	5200	7.772	7.5
	CH 48	5240	7.946	8.0
802.11n (HT20)	CH 36	5180	6.274	7.0
	CH 40	5200	6.473	7.0
	CH 48	5240	6.308	7.0
802.11n (HT40)	CH 38	5190	6.721	7.0
	CH 46	5230	6.757	7.0
802.11ac(VHT80)	CH42	5210	6.642	7.0

WLAN(5.8G) – Conducted Power				
Test Mode	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**	**Tune-up power (dBm)**
802.11a	CH 149	5745	7.975	8.0
	CH 157	5785	7.321	8.0
	CH 165	5825	7.053	8.0
802.11n (HT20)	CH 149	5745	**10.619**	11.0
	CH 157	5785	8.802	9.0
	CH 165	5825	10.373	11.0
802.11n (HT40)	CH 151	5755	8.193	8.5
	CH 159	5795	7.4	8.0
802.11ac(VHT80)	CH 155	5755	9.024	9.5

Remark:

1. Per KDB 248227 D01 v02r02, For 802.11b DSSS SAR measurements, DSSS SAR procedure applies to fixed exposure test position and initial test position procedure applies to multiple exposure test positions.

2. Per KDB 248227 D01 v02r02, For 802.11b DSSS SAR measurements ,when the reported SAR of the highest measured maximum output power channel (see 3.1) for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration. When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

3 .For OFDM modes (802.11g/n), SAR is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and it is <= 1.2W/kg.

4. Per KDB 248227 D01 v02r02, When multiple channel bandwidth configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined by applying the following steps sequentially.

1) The largest channel bandwidth configuration is selected among the multiple configurations in a frequency band with the same specified maximum output power.

2) If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.

3) If multiple configurations have the same specified maximum output power, largest channel bandwidth and lowest order modulation, the lowest data rate configuration among these configurations is selected.

4) When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n.

Bluetooth - Maximum Average Power			
Test Mode	**Data Rate**	**Average Power(dBm)**	**Tune-up power (dBm)**
GFSK	1Mbps	1.541	2.0
Pi/4 QDPSK	2Mbps	1.767	2.0
8DPSK	3Mbps	1.707	2.0

Bluetooth - Maximum Average Power					
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**	**Tune-up power (dBm)**
BLE	1Mbps	CH 00	2402	-3.194	-2.0
		CH 19	2440	-2.326	-2.0
		CH 39	2480	-2.613	-2.0

Remark:

Bluetooth maximum output power is 1.767dBm and Maximum Tune-Up output power is 2.0dBm,. Per KDB 447498 D01 V06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR,16 where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation17
- The result is rounded to one decimal place for comparison

Bluetooth:

Tune-Up Power (dBm)	Max. Power (mW)	Distance (mm)	Frequency (GHz)	Result	Limit
2.0	1.58	5	2.402	0.49	3

2.4G WIFI

Tune-Up Power (dBm)	Max. Power (mW)	Distance (mm)	Frequency (GHz)	Result	Limit
7.6	5.75	5	2.462	1.80	3

The exclusion thresholds is 1.80< 3, therefore, the RF exposure evaluation is not required.

9.2 Test Results for Standalone SAR Test

Head SAR

GSM850 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
1.	GSM	Right Cheek	190	836.6	33.28	33.5	1.052	0.072	**0.076**
2.	GSM	Right Tilted	190	836.6	33.28	33.5	1.052	0.036	0.038
3.	GSM	Left Cheek	190	836.6	33.28	33.5	1.052	0.058	0.061
4.	GSM	Left Tilted	190	836.6	33.28	33.5	1.052	0.045	0.047

GSM1900 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	M Hz					
5.	GSM	Right Cheek	810	1909.8	29.95	30.0	1.012	0.04	0.040
6.	GSM	Right Tilted	810	1909.8	29.95	30.0	1.012	0.023	0.023
7.	GSM	Left Cheek	810	1909.8	29.95	30.0	1.012	0.07	**0.071**
8.	GSM	Left Tilted	810	1909.8	29.95	30.0	1.012	0.035	0.035

GPRS850 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
9.	GPRS_2TX	Right Cheek	190	836.6	32.28	32.5	1.052	0.074	0.078
10.	GPRS_2TX	Right Tilted	190	836.6	32.28	32.5	1.052	0.038	0.040
11.	GPRS_2TX	Left Cheek	190	836.6	32.28	32.5	1.052	0.091	**0.096**
12.	GPRS_2TX	Left Tilted	190	836.6	32.28	32.5	1.052	0.04	0.042

GPRS1900 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	M Hz					
13.	GPRS_2TX	Right Cheek	810	1909.8	28.97	29.0	1.007	0.045	0.045
14.	GPRS_2TX	Right Tilted	810	1909.8	28.97	29.0	1.007	0.037	0.037
15.	GPRS_2TX	Left Cheek	810	1909.8	28.97	29.0	1.007	0.091	**0.092**
16.	GPRS_2TX	Left Tilted	810	1909.8	28.97	29.0	1.007	0.046	0.046

WCDMA Band 2 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
17.	RMC	Right Cheek	9538	1907.6	22.90	23.0	1.023	0.088	0.090
18.	RMC	Right Tilted	9538	1907.6	22.90	23.0	1.023	0.038	0.039
19.	RMC	Left Cheek	9538	1907.6	22.90	23.0	1.023	0.091	**0.093**
20.	RMC	Left Tilted	9538	1907.6	22.90	23.0	1.023	0.056	0.057

WCDMA Band 5 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
21.	RMC	Right Cheek	4132	826.4	23.43	23.5	1.016	0.058	0.059
22.	RMC	Right Tilted	4132	826.4	23.43	23.5	1.016	0.043	0.044
23.	RMC	Left Cheek	4132	826.4	23.43	23.5	1.016	0.059	**0.060**
24.	RMC	Left Tilted	4132	826.4	23.43	23.5	1.016	0.025	0.025

LTE Band 2– Head SAR Test								
Plot No.	Mode	Test Position Head	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
25.	QPSK 20MHz 1RB	Right Cheek	1900.0	23.93	24.0	1.016	0.129	0.131
26.	QPSK 20MHz 1RB	Right Tilted	1900.0	23.93	24.0	1.016	0.11	0.112
27.	QPSK 20MHz 1RB	Left Cheek	1900.0	23.93	24.0	1.016	0.223	0.227
28.	QPSK 20MHz 1RB	Left Tilted	1900.0	23.93	24.0	1.016	0.123	0.125
29.	QPSK 20MHz 50%RB	Right Cheek	1900.0	23.93	24.0	1.016	0.102	0.104
30.	QPSK 20MHz 50%RB	Right Tilted	1900.0	23.93	24.0	1.016	0.043	0.044
31.	QPSK 20MHz 50%RB	Left Cheek	1900.0	23.93	24.0	1.016	0.203	**0.206**
32.	QPSK 20MHz 50%RB	Left Tilted	1900.0	23.93	24.0	1.016	0.015	0.015

LTE Band 4– Head SAR Test								
Plot No.	Mode	Test Position Head	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
33.	QPSK 20MHz 1RB	Right Cheek	1720.0	24.29	24.5	1.050	0.368	0.386
34.	QPSK 20MHz 1RB	Right Tilted	1720.0	24.29	24.5	1.050	0.15	0.157
35.	QPSK 20MHz 1RB	Left Cheek	1720.0	24.29	24.5	1.050	0.609	**0.639**
36.	QPSK 20MHz 1RB	Left Tilted	1720.0	24.29	24.5	1.050	0.201	0.211
37.	QPSK 20MHz 50%RB	Right Cheek	1720.0	24.29	24.5	1.050	0.274	0.288
38.	QPSK 20MHz 50%RB	Right Tilted	1720.0	24.29	24.5	1.050	0.132	0.139
39.	QPSK 20MHz 50%RB	Left Cheek	1720.0	24.29	24.5	1.050	0.487	0.511

40.	QPSK 20MHz 50%RB	Left Tilted	1720.0	24.29	24.5	1.050	0.125	0.131

LTE Band 7– Head SAR Test								
Plot No.	**Mode**	**Test Position**	**Frequency**	**Output Power**	**Rated Limit**	**Scaling Factor**	**SAR1g (W/kg)**	**Scaled SAR1g (W/kg)**
	Modulation, Bandwidth	**Head**	**MHz**	**(dBm)**	**(dBm)**			
41.	QPSK 20MHz 1RB	Right Cheek	2510	23.76	24.0	1.057	0.08	**0.085**
42.	QPSK 20MHz 1RB	Right Tilted	2510	23.76	24.0	1.057	0.024	0.025
43.	QPSK 20MHz 1RB	Left Cheek	2510	23.76	24.0	1.057	0.071	0.075
44.	QPSK 20MHz 1RB	Left Tilted	2510	23.76	24.0	1.057	0.032	0.034
45.	QPSK 20MHz 50%RB	Right Cheek	2510	23.76	24.0	1.057	0.067	0.071
46.	QPSK 20MHz 50%RB	Right Tilted	2510	23.76	24.0	1.057	0.032	0.034
47.	QPSK 20MHz 50%RB	Left Cheek	2510	23.76	24.0	1.057	0.055	0.058
48.	QPSK 20MHz 50%RB	Left Tilted	2510	23.76	24.0	1.057	0.015	0.016

LTE Band 12– Head SAR Test								
Plot No.	**Mode**	**Test Position**	**Frequency**	**Output Power**	**Rated Limit**	**Scaling Factor**	**SAR1g (W/kg)**	**Scaled SAR1g (W/kg)**
	Modulation, Bandwidth	**Head**	**MHz**	**(dBm)**	**(dBm)**			
49.	QPSK 10MHz 1RB	Right Cheek	707.5	23.73	24.0	1.064	0.138	**0.147**
50.	QPSK 10MHz 1RB	Right Tilted	707.5	23.73	24.0	1.064	0.033	0.035
51.	QPSK 10MHz 1RB	Left Cheek	707.5	23.73	24.0	1.064	0.124	0.132
52.	QPSK 10MHz 1RB	Left Tilted	707.5	23.73	24.0	1.064	0.115	0.122
53.	QPSK 10MHz 50%RB	Right Cheek	707.5	23.73	24.0	1.064	0.123	0.131
54.	QPSK 10MHz 50%RB	Right Tilted	707.5	23.73	24.0	1.064	0.102	0.109
55.	QPSK 10MHz 50%RB	Left Cheek	707.5	23.73	24.0	1.064	0.101	0.107
56.	QPSK 10MHz 50%RB	Left Tilted	707.5	23.73	24.0	1.064	0.096	0.102

LTE Band 13– Head SAR Test								
Plot No.	**Mode**	**Test Position**	**Frequency**	**Output Power**	**Rated Limit**	**Scaling Factor**	**SAR1g (W/kg)**	**Scaled SAR1g (W/kg)**
	Modulation, Bandwidth	**Head**	**MHz**	**(dBm)**	**(dBm)**			
57.	QPSK 10MHz 1RB	Right Cheek	782	24.01	24.5	1.119	0.087	**0.097**
58.	QPSK 10MHz 1RB	Right Tilted	782	24.01	24.5	1.119	0.074	0.083
59.	QPSK 10MHz 1RB	Left Cheek	782	24.01	24.5	1.119	0.085	0.095
60.	QPSK 10MHz 1RB	Left Tilted	782	24.01	24.5	1.119	0.065	0.073
61.	QPSK 10MHz 50%RB	Right Cheek	782	24.01	24.5	1.119	0.069	0.077
62.	QPSK 10MHz 50%RB	Right Tilted	782	24.01	24.5	1.119	0.036	0.040
63.	QPSK 10MHz 50%RB	Left Cheek	782	24.01	24.5	1.119	0.073	0.082
64.	QPSK 10MHz 50%RB	Left Tilted	782	24.01	24.5	1.119	0.043	0.048

LTE Band 17– Head SAR Test								
Plot No.	Mode	Test Position Head	Frequency MHz	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth							
65.	QPSK 10MHz 1RB	Right Cheek	709	23.84	24.0	1.038	0.107	0.111
66.	QPSK 10MHz 1RB	Right Tilted	709	23.84	24.0	1.038	0.078	0.081
67.	QPSK 10MHz 1RB	Left Cheek	709	23.84	24.0	1.038	0.151	0.157
68.	QPSK 10MHz 1RB	Left Tilted	709	23.84	24.0	1.038	0.105	0.109
69.	QPSK 10MHz 50%RB	Right Cheek	709	23.84	24.0	1.038	0.081	0.084
70.	QPSK 10MHz 50%RB	Right Tilted	709	23.84	24.0	1.038	0.043	0.045
71.	QPSK 10MHz 50%RB	Left Cheek	709	23.84	24.0	1.038	0.111	**0.115**
72.	QPSK 10MHz 50%RB	Left Tilted	709	23.84	24.0	1.038	0.098	0.102

LTE Band 41– Head SAR Test								
Plot No.	Mode	Test Position Head	Frequency MHz	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth							
73.	QPSK 20MHz 1RB	Right Cheek	2645.0	24.36	24.5	1.033	0.007	0.007
74.	QPSK 20MHz 1RB	Right Tilted	2645.0	24.36	24.5	1.033	0.005	0.005
75.	QPSK 20MHz 1RB	Left Cheek	2645.0	24.36	24.5	1.033	0.009	**0.009**
76.	QPSK 20MHz 1RB	Left Tilted	2645.0	24.36	24.5	1.033	0.003	0.003
77.	QPSK 20MHz 50%RB	Right Cheek	2645.0	24.36	24.5	1.033	0.005	0.005
78.	QPSK 20MHz 50%RB	Right Tilted	2645.0	24.36	24.5	1.033	0.004	0.004
79.	QPSK 20MHz 50%RB	Left Cheek	2645.0	24.36	24.5	1.033	0.007	0.007
80.	QPSK 20MHz 50%RB	Left Tilted	2645.0	24.36	24.5	1.033	0.006	0.006

WLAN 5GHz(Band 1) – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
81.	802.11a	Right Cheek	48	5240	7.946	8.0	1.013	0.393	0.398
82.	802.11a	Right Tilted	48	5240	7.946	8.0	1.013	0.231	0.234
83.	802.11a	Left Cheek	48	5240	7.946	8.0	1.013	0.638	**0.646**
84.	802.11a	Left Tilted	48	5240	7.946	8.0	1.013	0.158	0.160

WLAN 5GHz(Band 4) – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
85.	802.11n (HT20)	Right Cheek	149	5745	10.619	11.0	1.092	0.658	**0.718**
86.	802.11n (HT20)	Right Tilted	149	5745	10.619	11.0	1.092	0.214	0.234
87.	802.11n (HT20)	Left Cheek	149	5745	10.619	11.0	1.092	0.644	0.703
88.	802.11n (HT20)	Left Tilted	149	5745	10.619	11.0	1.092	0.165	0.180

Remark: Per KDB 447498 D01 v06, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.

Body-worn SAR

GSM850 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
89.	GSM	Back	190	836.6	33.28	33.5	1.052	0.041	0.043
90.	GSM	Front	190	836.6	33.28	33.5	1.052	0.031	0.033

GSM1900 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
91.	GSM	Back	810	1909.8	29.95	30.0	1.012	0.153	0.155
92.	GSM	Front	810	1909.8	29.95	30.0	1.012	0.204	**0.206**

WCDMA Band 2 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
93.	RMC 12.2k	Back Side	9538	1907.6	22.90	23.0	1.023	0.298	0.305
94.	RMC 12.2k	Front Face	9538	1907.6	22.90	23.0	1.023	0.338	**0.346**

WCDMA Band 5 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
95.	RMC 12.2k	Back Side	4132	826.4	23.43	23.5	1.016	0.034	**0.035**
96.	RMC 12.2k	Front Side	4132	826.4	23.43	23.5	1.016	0.034	0.035

LTE Band 2–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
97.	QPSK 20MHz 1RB	Back Side	1900.0	23.93	24.0	1.016	0.373	0.379
98.	QPSK 20MHz 1RB	Front Side	1900.0	23.93	24.0	1.016	0.352	0.358
99.	QPSK 20MHz 50%RB	Back Side	1900.0	23.93	24.0	1.016	0.353	0.359
100.	QPSK 20MHz 50%RB	Front Side	1900.0	23.93	24.0	1.016	0.252	0.256

LTE Band 4–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Body	MHz	(dBm)	(dBm)			
101.	QPSK 20MHz 1RB	Back Side	1720.0	24.29	24.5	1.050	0.314	0.330
102.	QPSK 20MHz 1RB	Front Side	1720.0	24.29	24.5	1.050	0.482	**0.506**
103.	QPSK 20MHz 50%RB	Back Side	1720.0	24.29	24.5	1.050	0.291	0.305
104.	QPSK 20MHz 50%RB	Front Side	1720.0	24.29	24.5	1.050	0.338	0.355

LTE Band 7–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Body	MHz	(dBm)	(dBm)			
105.	QPSK 20MHz 1RB	Back Side	2560	24.15	24.5	1.084	0.212	0.230
106.	QPSK 20MHz 1RB	Front Side	2560	24.15	24.5	1.084	0.189	0.205
107.	QPSK 20MHz 50%RB	Back Side	2560	24.15	24.5	1.084	0.173	0.188
108.	QPSK 20MHz 50%RB	Front Side	2560	24.15	24.5	1.084	0.153	0.166

LTE Band 12–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Body	MHz	(dBm)	(dBm)			
109.	QPSK 10MHz 1RB	Back Side	707.5	23.73	24.0	1.064	0.147	**0.156**
110.	QPSK 10MHz 1RB	Front Side	707.5	23.73	24.0	1.064	0.123	0.131
111.	QPSK 10MHz 50%RB	Back Side	707.5	23.73	24.0	1.064	0.123	0.131
112.	QPSK 10MHz 50%RB	Front Side	707.5	23.73	24.0	1.064	0.103	0.110

LTE Band 13–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Body	MHz	(dBm)	(dBm)			
113.	QPSK 10MHz 1RB	Back Side	782	24.01	24.5	1.119	0.064	0.072
114.	QPSK 10MHz 1RB	Front Side	782	24.01	24.5	1.119	0.089	**0.100**
115.	QPSK 10MHz 50%RB	Back Side	782	24.01	24.5	1.119	0.056	0.063
116.	QPSK 10MHz 50%RB	Front Side	782	24.01	24.5	1.119	0.077	0.086

LTE Band 17–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
117.	QPSK 10MHz 1RB	Back Side	709	23.84	24.0	1.038	0.119	0.123
118.	QPSK 10MHz 1RB	Front Side	709	23.84	24.0	1.038	0.144	**0.149**
119.	QPSK 10MHz 50%RB	Back Side	709	23.84	24.0	1.038	0.101	0.105
120.	QPSK 10MHz 50%RB	Front Side	709	23.84	24.0	1.038	0.111	0.115

LTE Band 41–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
121.	QPSK 20MHz 1RB	Back Side	2645.0	24.36	24.5	1.033	0.016	0.017
122.	QPSK 20MHz 1RB	Front Side	2645.0	24.36	24.5	1.033	0.009	0.009
123.	QPSK 20MHz 50%RB	Back Side	2645.0	24.36	24.5	1.033	0.011	0.011
124.	QPSK 20MHz 50%RB	Front Side	2645.0	24.36	24.5	1.033	0.006	0.006

WLAN 5GHz(Band 1) –Body SAR Test									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
125.	802.11a	Back Side	48	5240	7.946	8.0	1.013	0.49	0.496
126.	802.11a	Front Side	48	5240	7.946	8.0	1.013	0.334	0.338

WLAN 5GHz(Band 4) –Body SAR Test									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
127.	802.11n (HT20)	Back Side	149	5745	10.619	11.0	1.092	0.819	0.894
128.	802.11n (HT20)	Front Side	149	5745	10.619	11.0	1.092	0.542	0.592
129.	802.11n (HT20)	Back Side	157	5785	8.802	9.0	1.047	0.76	0.795
130.	802.11n (HT20)	Back Side	165	5825	10.373	11.0	1.155	0.827	**0.955**

Hotspot SAR

GSM850 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
131.	GPRS_2TX	Back Side	190	836.6	32.28	32.5	1.052	0.048	**0.050**
132.	GPRS_2TX	Front Side	190	836.6	32.28	32.5	1.052	0.042	0.044
133.	GPRS_2TX	Right side	190	836.6	32.28	32.5	1.052	0.017	0.018
134.	GPRS_2TX	Left side	190	836.6	32.28	32.5	1.052	0.021	0.022
135.	GPRS_2TX	Bottom side	190	836.6	32.28	32.5	1.052	0.034	0.036

GSM1900 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
136.	GPRS_2TX	Back Side	810	1909.8	28.97	29.0	1.007	0.172	0.173
137.	GPRS_2TX	Front Side	810	1909.8	28.97	29.0	1.007	0.188	0.189
138.	GPRS_2TX	Right side	810	1909.8	28.97	29.0	1.007	0.025	0.025
139.	GPRS_2TX	Left side	810	1909.8	28.97	29.0	1.007	0.026	0.026
140.	GPRS_2TX	Bottom side	810	1909.8	28.97	29.0	1.007	0.347	**0.349**

WCDMA Band 2 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
141.	RMC 12.2k	Back Side	9538	1907.6	22.90	23.0	1.023	0.298	0.305
142.	RMC 12.2k	Front Face	9538	1907.6	22.90	23.0	1.023	0.338	**0.346**
143.	RMC 12.2k	Right side	9538	1907.6	22.90	23.0	1.023	0.055	0.056
144.	RMC 12.2k	Left side	9538	1907.6	22.90	23.0	1.023	0.040	0.041
145.	RMC 12.2k	Bottom Side	9538	1907.6	22.90	23.0	1.023	0.699	0.715

WCDMA Band 5 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
146.	RMC 12.2k	Back Side	4132	826.4	23.43	23.5	1.016	0.034	**0.035**
147.	RMC 12.2k	Front Side	4132	826.4	23.43	23.5	1.016	0.034	0.035
148.	RMC 12.2k	Right side	4132	826.4	23.43	23.5	1.016	0.014	0.014
149.	RMC 12.2k	Left side	4132	826.4	23.43	23.5	1.016	0.016	0.016
150.	RMC 12.2k	Bottom side	4132	826.4	23.43	23.5	1.016	0.028	0.028

LTE Band 2–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position Body	Frequency MHz	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB							
151.	QPSK 20MHz 1RB	Back Side	1900.0	23.93	24.0	1.016	0.373	0.379
152.	QPSK 20MHz 1RB	Front Side	1900.0	23.93	24.0	1.016	0.352	0.358
153.	QPSK 20MHz 1RB	Right side	1900.0	23.93	24.0	1.016	0.076	0.077
154.	QPSK 20MHz 1RB	Left side	1900.0	23.93	24.0	1.016	0.045	0.046
155.	QPSK 20MHz 1RB	Bottom side	1900.0	23.93	24.0	1.016	0.653	**0.664**
156.	QPSK 20MHz 50%RB	Back Side	1900.0	23.93	24.0	1.016	0.353	0.359
157.	QPSK 20MHz 50%RB	Front Side	1900.0	23.93	24.0	1.016	0.252	0.256
158.	QPSK 20MHz 50%RB	Right side	1900.0	23.93	24.0	1.016	0.07	0.071
159.	QPSK 20MHz 50%RB	Left side	1900.0	23.93	24.0	1.016	0.041	0.042
160.	QPSK 20MHz 50%RB	Bottom side	1900.0	23.93	24.0	1.016	0.295	0.300

LTE Band 4–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position Body	Frequency MHz	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB							
161.	QPSK 20MHz 1RB	Back Side	1720.0	24.29	24.5	1.050	0.314	0.330
162.	QPSK 20MHz 1RB	Front Side	1720.0	24.29	24.5	1.050	0.482	**0.506**
163.	QPSK 20MHz 1RB	Right side	1720.0	24.29	24.5	1.050	0.154	0.162
164.	QPSK 20MHz 1RB	Left side	1720.0	24.29	24.5	1.050	0.131	0.137
165.	QPSK 20MHz 1RB	Bottom side	1720.0	24.29	24.5	1.050	0.462	0.485
166.	QPSK 20MHz 50%RB	Back Side	1720.0	24.29	24.5	1.050	0.291	0.305
167.	QPSK 20MHz 50%RB	Front Side	1720.0	24.29	24.5	1.050	0.338	0.355
168.	QPSK 20MHz 50%RB	Right side	1720.0	24.29	24.5	1.050	0.129	0.135
169.	QPSK 20MHz 50%RB	Left side	1720.0	24.29	24.5	1.050	0.111	0.116
170.	QPSK 20MHz 50%RB	Bottom side	1720.0	24.29	24.5	1.050	0.393	0.412

LTE Band 7–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Body	MHz	(dBm)	(dBm)			
171.	QPSK 20MHz 1RB	Back Side	2560	24.15	24.5	1.084	0.212	0.230
172.	QPSK 20MHz 1RB	Front Side	2560	24.15	24.5	1.084	0.189	0.205
173.	QPSK 20MHz 1RB	Right side	2560	24.15	24.5	1.084	0.036	0.039
174.	QPSK 20MHz 1RB	Left side	2560	24.15	24.5	1.084	0.044	0.048
175.	QPSK 20MHz 1RB	Bottom side	2560	24.15	24.5	1.084	0.299	**0.324**
176.	QPSK 20MHz 50%RB	Back Side	2560	24.15	24.5	1.084	0.173	0.188
177.	QPSK 20MHz 50%RB	Front Side	2560	24.15	24.5	1.084	0.153	0.166
178.	QPSK 20MHz 50%RB	Right side	2560	24.15	24.5	1.084	0.030	0.033
179.	QPSK 20MHz 50%RB	Left side	2560	24.15	24.5	1.084	0.036	0.039
180.	QPSK 20MHz 50%RB	Bottom side	2560	24.15	24.5	1.084	0.238	0.258

LTE Band 12–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Body	MHz	(dBm)	(dBm)			
181.	QPSK 10MHz 1RB	Back Side	707.5	23.73	24.0	1.064	0.147	**0.156**
182.	QPSK 10MHz 1RB	Front Side	707.5	23.73	24.0	1.064	0.123	0.131
183.	QPSK 10MHz 1RB	Right side	707.5	23.73	24.0	1.064	0.029	0.031
184.	QPSK 10MHz 1RB	Left side	707.5	23.73	24.0	1.064	0.048	0.051
185.	QPSK 10MHz 1RB	Bottom side	707.5	23.73	24.0	1.064	0.072	0.077
186.	QPSK 10MHz 50%RB	Back Side	707.5	23.73	24.0	1.064	0.123	0.131
187.	QPSK 10MHz 50%RB	Front Side	707.5	23.73	24.0	1.064	0.103	0.110
188.	QPSK 10MHz 50%RB	Right side	707.5	23.73	24.0	1.064	0.026	0.028
189.	QPSK 10MHz 50%RB	Left side	707.5	23.73	24.0	1.064	0.040	0.043
190.	QPSK 10MHz 50%RB	Bottom side	707.5	23.73	24.0	1.064	0.055	0.059

LTE Band 13–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Body	MHz	(dBm)	(dBm)			
191.	QPSK 10MHz 1RB	Back Side	782	24.01	24.5	1.119	0.064	0.072
192.	QPSK 10MHz 1RB	Front Side	782	24.01	24.5	1.119	0.089	**0.100**
193.	QPSK 10MHz 1RB	Right side	782	24.01	24.5	1.119	0.030	0.034
194.	QPSK 10MHz 1RB	Left side	782	24.01	24.5	1.119	0.036	0.040
195.	QPSK 10MHz 1RB	Bottom side	782	24.01	24.5	1.119	0.042	0.047
196.	QPSK 10MHz 50%RB	Back Side	782	24.01	24.5	1.119	0.056	0.063
197.	QPSK 10MHz 50%RB	Front Side	782	24.01	24.5	1.119	0.077	0.086
198.	QPSK 10MHz 50%RB	Right side	782	24.01	24.5	1.119	0.026	0.029
199.	QPSK 10MHz 50%RB	Left side	782	24.01	24.5	1.119	0.029	0.032
200.	QPSK 10MHz 50%RB	Bottom side	782	24.01	24.5	1.119	0.034	0.038

LTE Band 17–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Body	MHz	(dBm)	(dBm)			
201.	QPSK 10MHz 1RB	Back Side	709	23.84	24.0	1.038	0.119	0.123
202.	QPSK 10MHz 1RB	Front Side	709	23.84	24.0	1.038	0.144	**0.149**
203.	QPSK 10MHz 1RB	Right side	709	23.84	24.0	1.038	0.042	0.044
204.	QPSK 10MHz 1RB	Left side	709	23.84	24.0	1.038	0.038	0.039
205.	QPSK 10MHz 1RB	Bottom side	709	23.84	24.0	1.038	0.066	0.068
206.	QPSK 10MHz 50%RB	Back Side	709	23.84	24.0	1.038	0.101	0.105
207.	QPSK 10MHz 50%RB	Front Side	709	23.84	24.0	1.038	0.111	0.115
208.	QPSK 10MHz 50%RB	Right side	709	23.84	24.0	1.038	0.034	0.035
209.	QPSK 10MHz 50%RB	Left side	709	23.84	24.0	1.038	0.031	0.032
210.	QPSK 10MHz 50%RB	Bottom side	709	23.84	24.0	1.038	0.052	0.054

LTE Band 41–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
211.	QPSK 20MHz 1RB	Back Side	2645.0	24.36	24.5	1.033	0.016	0.017
212.	QPSK 20MHz 1RB	Front Side	2645.0	24.36	24.5	1.033	0.009	0.009
213.	QPSK 20MHz 1RB	Right side	2645.0	24.36	24.5	1.033	0.003	0.003
214.	QPSK 20MHz 1RB	Left side	2645.0	24.36	24.5	1.033	0.005	0.005
215.	QPSK 20MHz 1RB	Bottom side	2645.0	24.36	24.5	1.033	0.017	**0.018**
216.	QPSK 20MHz 50%RB	Back Side	2645.0	24.36	24.5	1.033	0.011	0.011
217.	QPSK 20MHz 50%RB	Front Side	2645.0	24.36	24.5	1.033	0.006	0.006
218.	QPSK 20MHz 50%RB	Right side	2645.0	24.36	24.5	1.033	0.003	0.003
219.	QPSK 20MHz 50%RB	Left side	2645.0	24.36	24.5	1.033	0.003	0.003
220.	QPSK 20MHz 50%RB	Bottom side	2645.0	24.36	24.5	1.033	0.008	0.008

WLAN 5GHz(Band 1) –Body SAR Test									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
221.	802.11a	Back Side	48	5240	7.946	8.0	1.013	0.49	0.496
222.	802.11a	Front Side	48	5240	7.946	8.0	1.013	0.334	0.338
223.	802.11a	Right side	48	5240	7.946	8.0	1.013	0.413	0.418
224.	802.11a	Top side	48	5240	7.946	8.0	1.013	0.588	**0.595**

WLAN 5GHz(Band 4) –Body SAR Test									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
225.	802.11n (HT20)	Back Side	149	5745	10.619	11.0	1.092	0.819	0.894
226.	802.11n (HT20)	Front Side	149	5745	10.619	11.0	1.092	0.542	0.592
227.	802.11n (HT20)	Right side	149	5745	10.619	11.0	1.092	0.717	0.783
228.	802.11n (HT20)	Top side	149	5745	10.619	11.0	1.092	0.723	0.789
229.	802.11n (HT20)	Back Side	157	5785	8.802	9.0	1.047	0.76	0.795
230.	802.11n (HT20)	Back Side	165	5825	10.373	11.0	1.155	0.827	**0.955**

Remark: Per KDB 447498 D01 v06, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.

9.3 Simultaneous Multi-band Transmission SAR Analysis

List of Mode for Simultaneous Multi-band Transmission

No.	Configurations	Head SAR	Body SAR
1	GSM(Voice/Data) + WLAN(2.4G)(Data)	Yes	Yes
2	WCDMA (Voice/Data)+ (2.4G)(Data)	Yes	Yes
3	LTE(Data) + (2.4G)(Data)	Yes	Yes
4	GSM(Voice/Data) + WLAN(5G)(Data)	Yes	Yes
5	WCDMA (Voice/Data)+ (5G)(Data)	Yes	Yes
6	LTE(Data) + (5G)(Data)	Yes	Yes
7	GSM(Voice/Data) + Bluetooth(Data)	Yes	Yes
8	WCDMA (Voice/Data) + Bluetooth(Data)	Yes	Yes
9	LTE(Data) + Bluetooth(Data)	Yes	Yes

Remark:

1. GSM ,WCDMA and LTE share the same antenna, and cannot transmit simultaneously.
2. WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
3. According to the KDB 447498 D01 v06, when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

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

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

For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01 v06 as below:

Bluetooth:

Tune-Up Power (dBm)	Max. Power (mW)	Distance (mm)	Frequency (GHz)	X	SAR(1g) 5mm	SAR(1g) 10mm
2.0	1.58	5/10	2.402	7.5	0.065	0.032

WIFI:

Tune-Up Power (dBm)	Max. Power (mW)	Distance (mm)	Frequency (GHz)	X	SAR(1g) 5mm	SAR(1g) 10mm
7.6	5.75	5/10	2.462	7.5	0.236	0.118

4. The maximum SAR summation is calculated based on the same configuration and test position.

Head SAR

WWAN and WLAN

	WWAN		WLAN(2.4G)	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Right Cheek	LTE Band 4	0.386	0.236	0.622
Right Tilted	LTE Band 4	0.157	0.236	0.393
Left Cheek	LTE Band 4	**0.639**	0.236	**0.875**
Left Tilted	LTE Band 4	0.211	0.236	0.447

	WWAN		WLAN(5G)	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Right Cheek	LTE Band 4	0.386	**0.718**	1.104
Right Tilted	LTE Band 4	0.157	0.234	0.391
Left Cheek	LTE Band 4	**0.639**	0.703	**1.342**
Left Tilted	LTE Band 4	0.211	0.180	0.391

WWAN and Bluetooth

	WWAN		Bluetooth	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Right Cheek	LTE Band 4	0.386	0.065	0.451
Right Tilted	LTE Band 4	0.157	0.065	0.222
Left Cheek	LTE Band 4	**0.639**	0.065	**0.704**
Left Tilted	LTE Band 4	0.211	0.065	0.276

Body-worn SAR

WWAN and WLAN

	WWAN		WLAN(2.4G)	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	LTE Band 2	0.379	0.118	0.497
Front	LTE Band 4	0.506	0.118	0.624

	WWAN		WLAN(5G)	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	LTE Band 2	0.379	0.955	**1.334**
Front	LTE Band 4	0.506	0.592	1.098

WWAN and Bluetooth

	WWAN		Bluetooth	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	LTE Band 2	0.379	0.032	0.411
Front	LTE Band 4	0.506	0.032	0.538

Hotspot SAR

WWAN and WLAN

	WWAN		WLAN(2.4G)	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	LTE Band 2	0.379	0.118	0.497
Front	LTE Band 4	0.506	0.118	0.624
Right side	LTE Band 4	0.162	0.118	0.28
Left side	LTE Band 4	0.137	0.118	0.255
Bottom side	LTE Band 2	0.664	0.118	0.782
Top side	-	-	0.118	0.018

	WWAN		WLAN(5G)	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	LTE Band 2	0.379	0.955	**1.334**
Front	LTE Band 4	0.506	0.592	1.098
Right side	LTE Band 4	0.162	0.783	0.945
Left side	LTE Band 4	0.137	-	0.137
Bottom side	LTE Band 2	0.664	-	0.664
Top side	-	-	0.723	0.723

WWAN and Bluetooth

	WWAN		Bluetooth	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	LTE Band 2	0.379	0.032	0.411
Front	LTE Band 4	0.506	0.032	0.538
Right side	LTE Band 4	0.162	0.032	0.194
Left side	LTE Band 4	0.137	0.032	0.169
Bottom side	LTE Band 2	0.664	0.032	0.696
Top side	-	-	0.032	0.032

10. Measurement Uncertainty

10.1 Uncertainty for EUT SAR Test

a	b	c	d	e= f(d,k)	f	g	h= c*f/e	i= c*g/e	k
Uncertainty Component	**Sec.**	**Tol (+- %)**	**Prob. Dist.**	**Div.**	**Ci (1g)**	**Ci (10g)**	**1g Ui (+-%)**	**10g Ui (+-%)**	**Vi**
Measurement System									
Probe calibration	E.2.1	7.0	N	1	1	1	7.00	7.00	∝
Axial Isotropy	E.2.2	2.5	R	√3	(1_Cp)^1/2	(1_Cp)^1/2	1.02	1.02	∝
Hemispherical Isotropy	E.2.2	4.0	R	√3	(Cp)^1/2	(Cp)^1/2	1.63	1.63	∝
Boundary effect	E.2.3	1.0	R	√3	1	1	0.58	0.58	∝
Linearity	E.2.4	5.0	R	√3	1	1	2.89	2.89	∝
System detection limits	E.2.5	1.0	R	√3	1	1	0.58	0.58	∝
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	∝
Reponse Time	E.2.7	3.0	R	√3	1	1	1.73	1.73	∝
Integration Time	E.2.8	2.0	R	√3	1	1	1.15	1.15	∝
RF ambient Conditions – Noise	E.6.1	3.0	R	√3	1	1	1.73	1.73	∝
RF ambient Conditions - Reflections	E.6.1	3.0	R	√3	1	1	1.73	1.73	∝
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	√3	1	1	1.15	1.15	∝
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	√3	1	1	0.03	0.03	∝
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5	5.0	R	√3	1	1	2.89	2.89	∝
Test Sample Related									
Test sample positioning	E.4.2	0.03	N	1	1	1	0.03	0.03	N−1
Device Holder Uncertainty	E.4.1	5.00	N	1	1	1	5.00	5.00	
Output power Variation - SAR drift measurement	E.2.9	12.02	R	√3	1	1	6.94	6.94	∝
SAR scaling	E6.5	0.0	R	√3	1	1	0.0	0.0	∝
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	√3	1	1	0.03	0.03	∝
Uncertainty in SAR correction for deviations in permittivity and conductivity	E3.2	1.9	R	√3	1	0.84	1.10	0.90	∝

Liquid conductivity - deviation from target value	E.3.2	5.00	R	√3	0.64	0.43	1.85	1.24	∝
Liquid conductivity - measurement uncertainty	E.3.3	5.00	N	1	0.64	0.43	3.20	2.15	∝
Liquid permittivity - deviation from target value	E.3.2	0.37	R	√3	0.6	0.49	0.13	0.10	∝
Liquid permittivity - measurement uncertainty	E.3.3	10.00	N	1	0.6	0.49	6.00	4.90	∝
Combined Standard Uncertainty			RSS				12.98	12.53	
Expanded Uncertainty (95% Confidence interval)			K=2				25.32	24.43	

10.2 Uncertainty for System Performance Check

a	b	c	d	e= f(d,k)	f	g	h= c*f/e	i= c*g/e	k
Uncertainty Component	**Sec.**	**Tol (+- %)**	**Prob. Dist.**	**Div.**	**Ci (1g)**	**Ci (10g)**	**1g Ui (+-%)**	**10g Ui (+-%)**	**Vi**
Measurement System									
Probe calibration	E.2.1	7.0	N	1	1	1	7.00	7.00	∝
Axial Isotropy	E.2.2	2.5	R	√3	(1_Cp)^1/2	(1_Cp)^1/2	1.02	1.02	∝
Hemispherical Isotropy	E.2.2	4.0	R	√3	(Cp)^1/2	(Cp)^1/2	1.63	1.63	∝
Boundary effect	E.2.3	1.0	R	√3	1	1	0.58	0.58	∝
Linearity	E.2.4	5.0	R	√3	1	1	2.89	2.89	∝
System detection limits	E.2.5	1.0	R	√3	1	1	0.58	0.58	∝
Modulation response	E.2.5	0	R	√3	0	0	0.0	0.0	∝
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	∝
Reponse Time	E.2.7	3.0	R	√3	1	1	1.73	1.73	∝
Integration Time	E.2.8	2.0	R	√3	1	1	1.15	1.15	∝
RF ambient Conditions – Noise	E.6.1	3.0	R	√3	1	1	1.73	1.73	∝
RF ambient Conditions - Reflections	E.6.1	3.0	R	√3	1	1	1.73	1.73	∝
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	√3	1	1	1.15	1.15	∝
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	√3	1	1	0.03	0.03	∝
Extrapolation, interpolation and	E.5.2	5.0	R	√3	1	1	2.89	2.89	∝

integration Algoritms for Max. SAR Evaluation									
Dipole									
Dipole axis to liquid Distance	8,E.4.2	1.00	N	√3	1	1	0.58	0.58	N−1
Input power and SAR drift measurement	8,6.6.2	12.02	R	√3	1	1	6.94	6.94	∝
Deviation of experimental dipole from numerical dipole	E.6.4	5.5	R	√3	1	1	3.20	3.20	∝
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	√3	1	1	0.03	0.03	∝
Uncertainty in SAR correction for deviations in permittivity and conductivity	E3.2	2.0	R	√3	1	0.84	1.10	1.10	∝
Liquid conductivity - deviation from target value	E.3.2	5.00	R	√3	0.64	0.43	1.85	1.24	
Liquid conductivity - measurement uncertainty	E.3.3	5.00	N	1	0.64	0.43	3.20	2.15	
Liquid permittivity - deviation from target value	E.3.2	0.37	R	√3	0.6	0.49	0.13	0.10	
Liquid permittivity - measurement uncertainty	E.3.3	10.00	N	1	0.6	0.49	6.00	4.90	M
Combined Standard Uncertainty			RSS				12.00	11.50	
Expanded Uncertainty (95% Confidence interval)			K=2				23.39	22.43	

Annex A. Plots of System Performance Check

MEASUREMENT 1

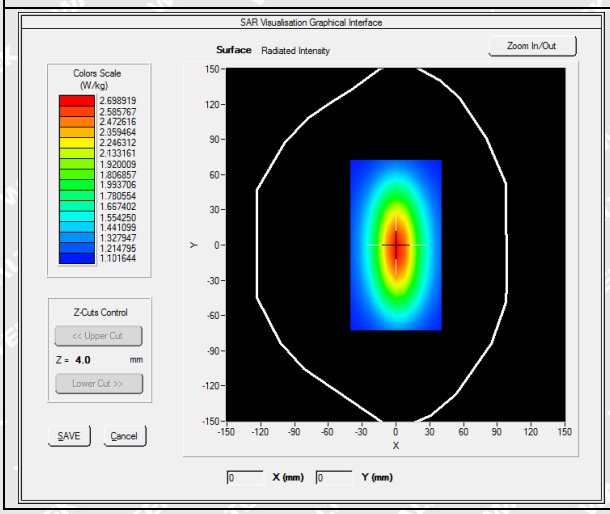
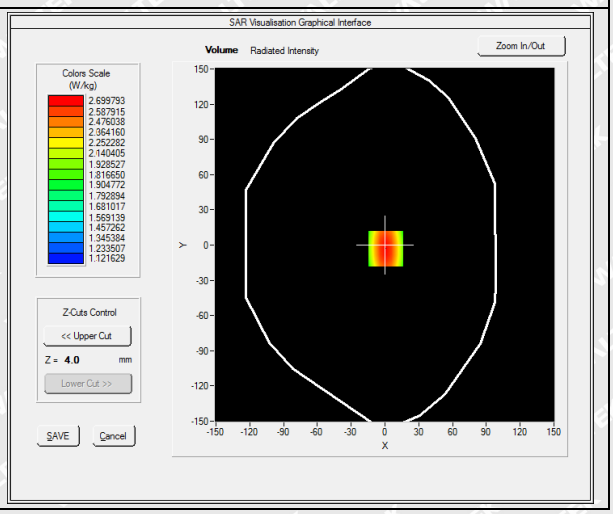
Type: Validation measurement (Fast, 75.00 %)
Measurement duration: 7 minutes 21 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020-07.03

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Phantom	Validation plane
Device Position	Dipole
Band	CW750
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	750.000000
Relative Permittivity (real part)	41.320574
Conductivity (S/m)	0.862373
Power Variation (%)	0.038363
Ambient Temperature	21.1
Liquid Temperature	21.3

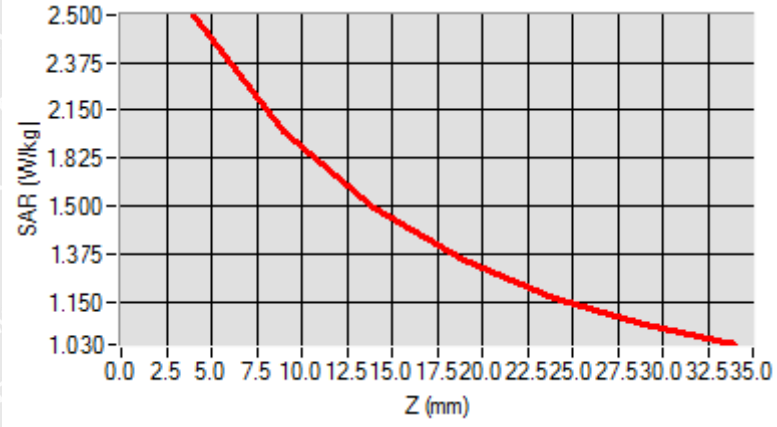
SURFACE SAR	VOLUME SAR
	

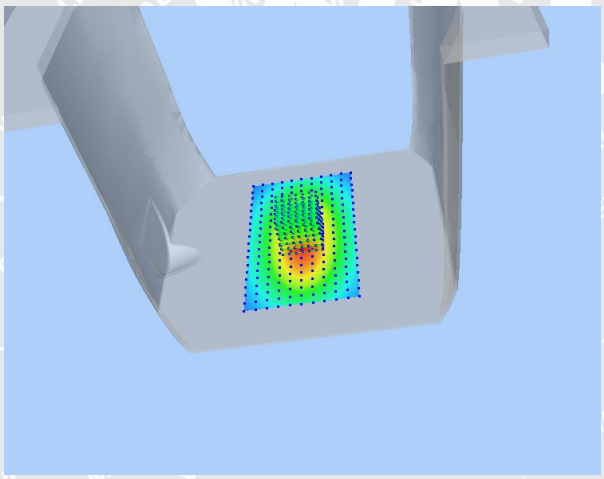
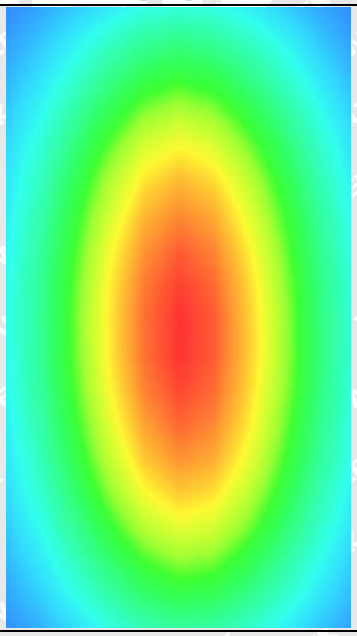
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	**1.042744**
SAR 1g (W/Kg)	**2.164534**

Z Axis Scan

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**	**24.00**	**29.00**
SAR (W/Kg)	**0.0000**	**2.3634**	**1.8023**	**1.4523**	**1.2514**	**1.1005**	**1.0245**



3D screen shot	**Hot spot position**
	

MEASUREMENT 2

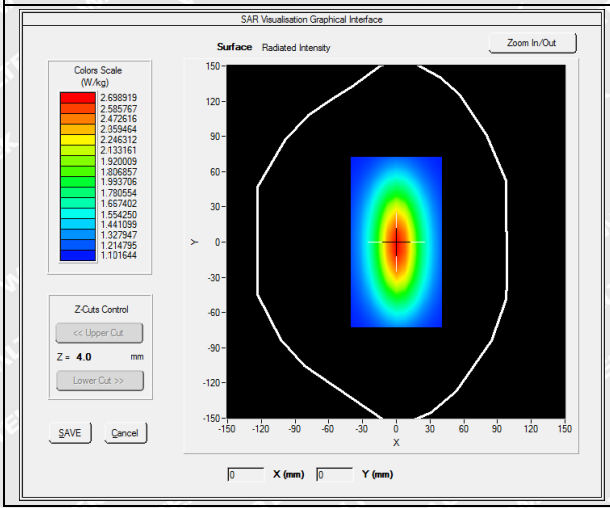
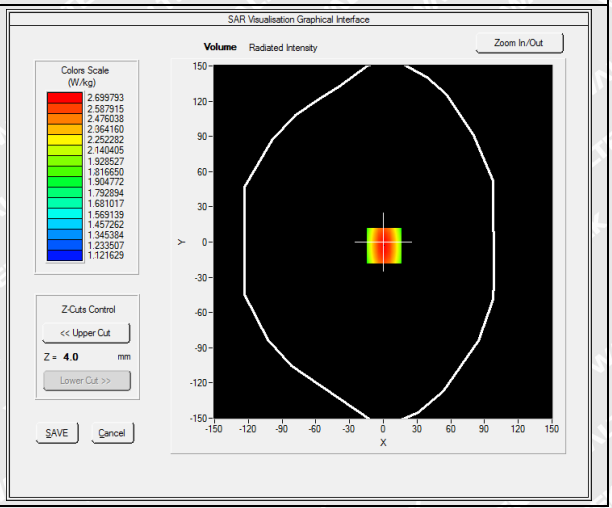
Type: Validation measurement (Fast, 75.00 %)
Measurement duration: 7 minutes 21 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020-07.03

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Phantom	Validation plane
Device Position	Dipole
Band	CW835
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	835.000000
Relative Permittivity (real part)	41.110245
Conductivity (S/m)	0.871245
Power Variation (%)	0.038437
Ambient Temperature	21.1
Liquid Temperature	21.3

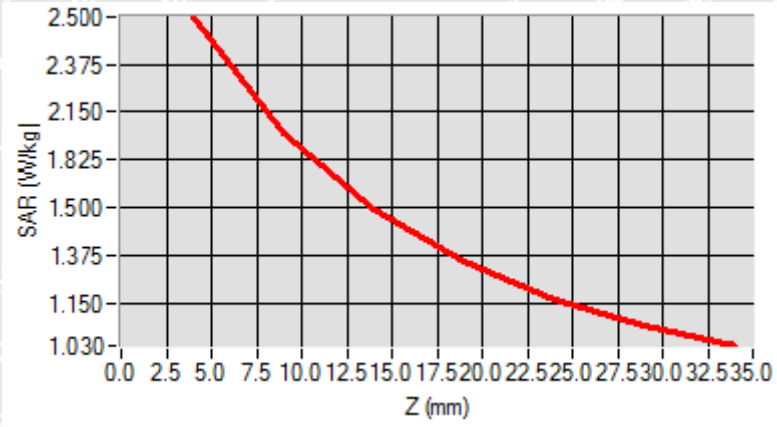
SURFACE SAR	VOLUME SAR
	

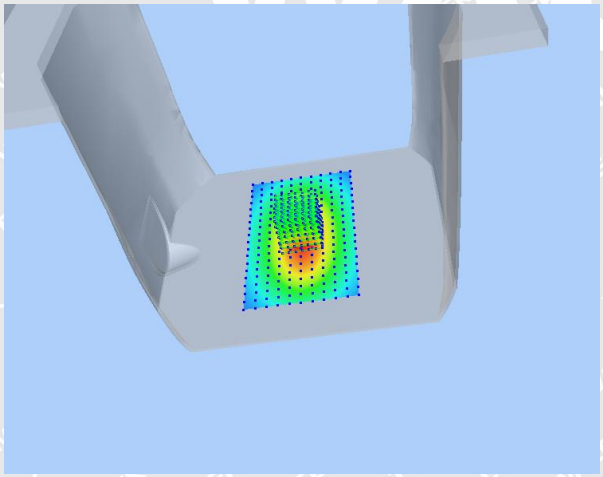
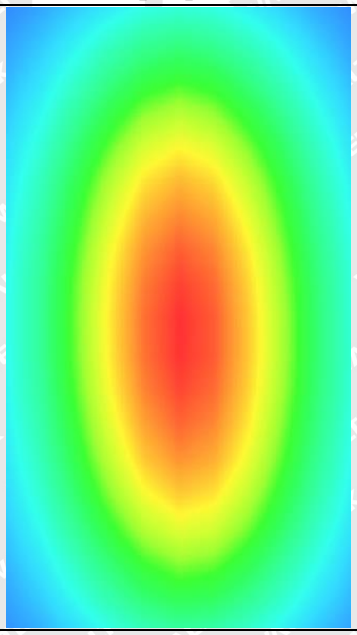
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	**1.519489**
SAR 1g (W/Kg)	**2.411253**

Z Axis Scan

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**	**24.00**	**29.00**
SAR (W/Kg)	**0.0000**	**2.4900**	**1.8942**	**1.4811**	**1.3541**	**1.1123**	**1.0539**



3D screen shot	**Hot spot position**
	

MEASUREMENT 3

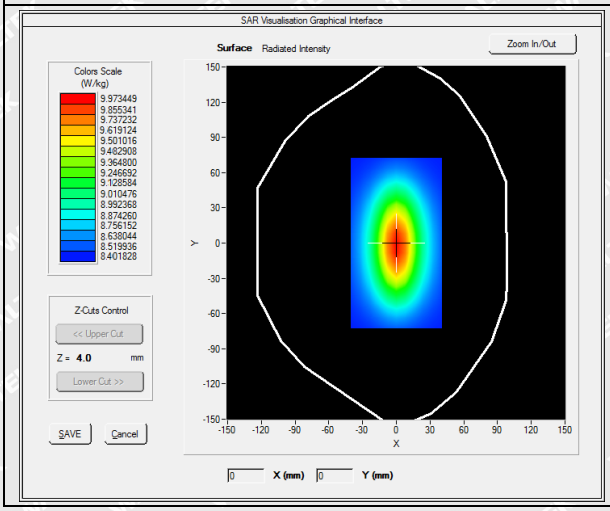
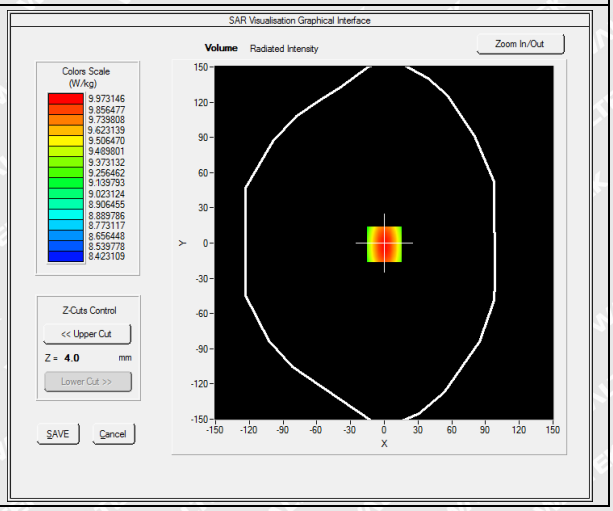
Type: Validation measurement (Fast, 75.00 %)
Measurement duration: 12 minutes 21 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020-07.03

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Phantom	Validation plane
Device Position	Dipole
Band	CW1800
Signal	CW (Crest factor: 1.0)

B. SAR Measurement Results

Frequency (MHz)	1800.000000
Relative Permittivity (real part)	39.024890
Conductivity (S/m)	1.371250
Power Variation (%)	1.401232
Ambient Temperature	21.1
Liquid Temperature	21.2

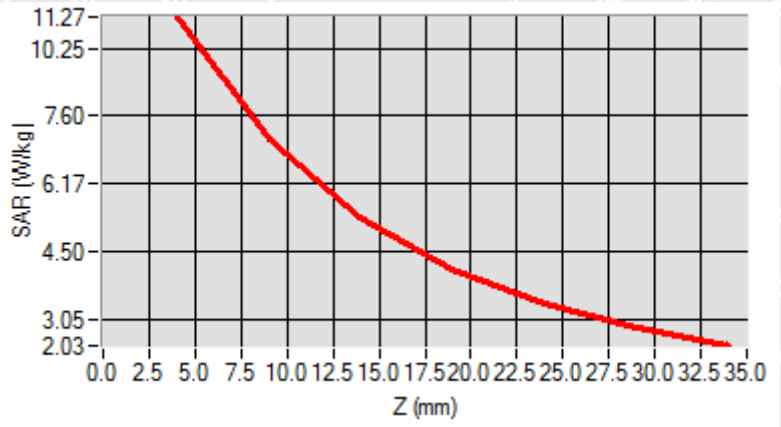
SURFACE SAR	VOLUME SAR
	

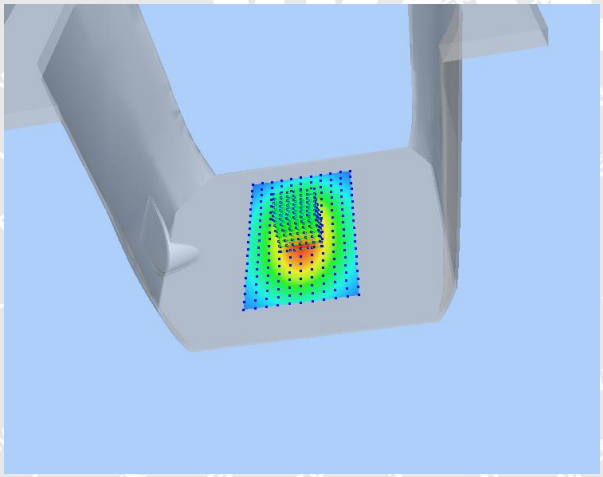
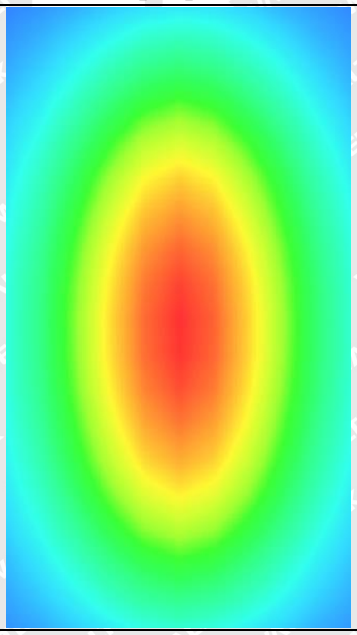
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	**5.171252**
SAR 1g (W/Kg)	**9.611250**

Z Axis Scan

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**	**24.00**	**29.00**
SAR (W/Kg)	**0.0000**	**10.3455**	**7.1125**	**5.1026**	**3.425**	**3.0242**	**2.1125**



3D screen shot	**Hot spot position**
	

MEASUREMENT 4

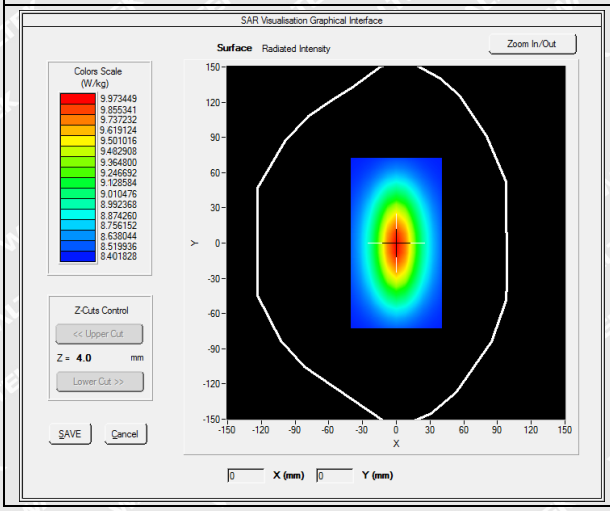
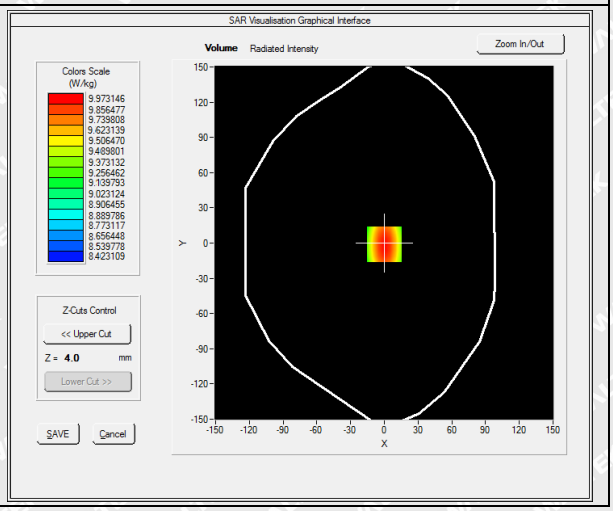
Type: Validation measurement (Fast, 75.00 %)
Measurement duration: 12 minutes 21 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020-07.03

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Phantom	Validation plane
Device Position	Dipole
Band	CW1900
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	1900.000000
Relative Permittivity (real part)	38.560124
Conductivity (S/m)	1.380369
Power Variation (%)	1.022540
Ambient Temperature	21.1
Liquid Temperature	21.3

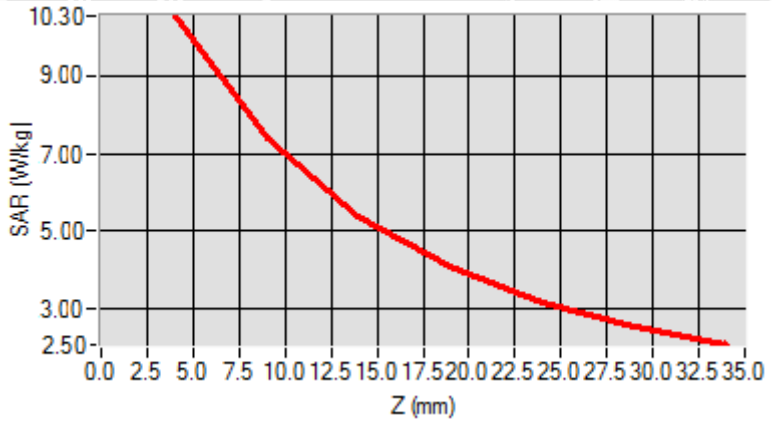
SURFACE SAR	VOLUME SAR
	

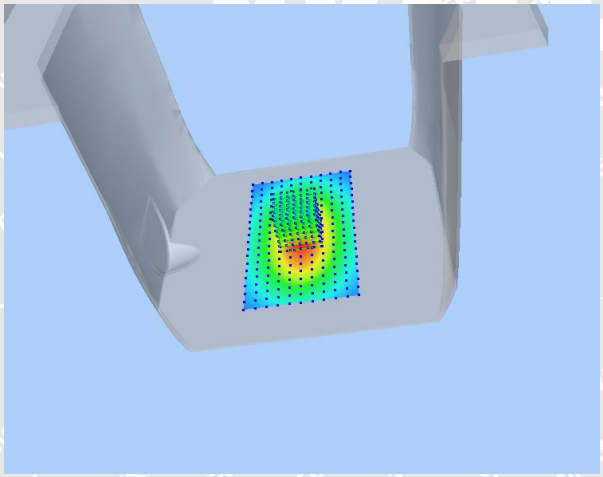
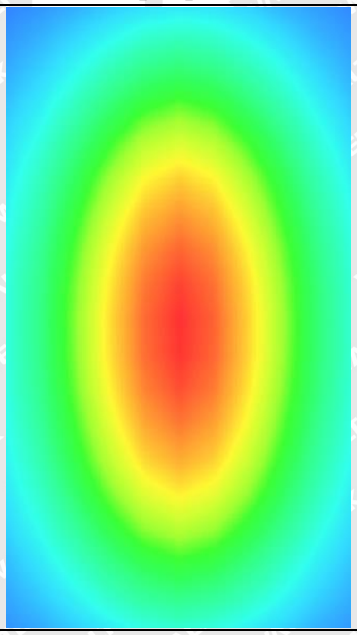
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	**5.174526**
SAR 1g (W/Kg)	**9.913214**

Z Axis Scan

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**	**24.00**	**29.00**
SAR (W/Kg)	**0.0000**	**10.2354**	**6.8400**	**5.0121**	**4.1189**	**3.0522**	**2.8424**



3D screen shot	**Hot spot position**
	

MEASUREMENT 5

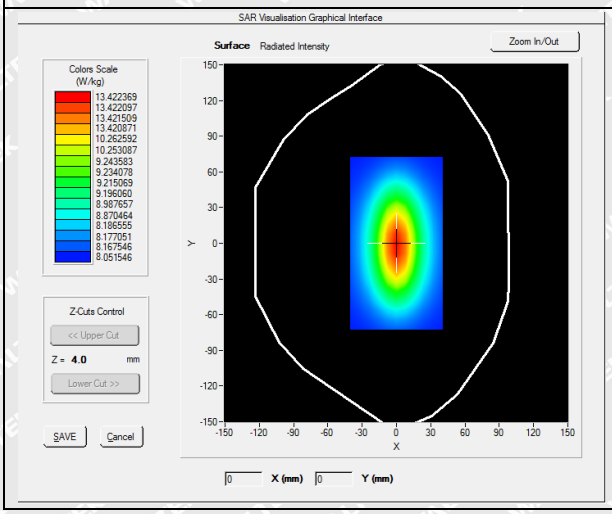
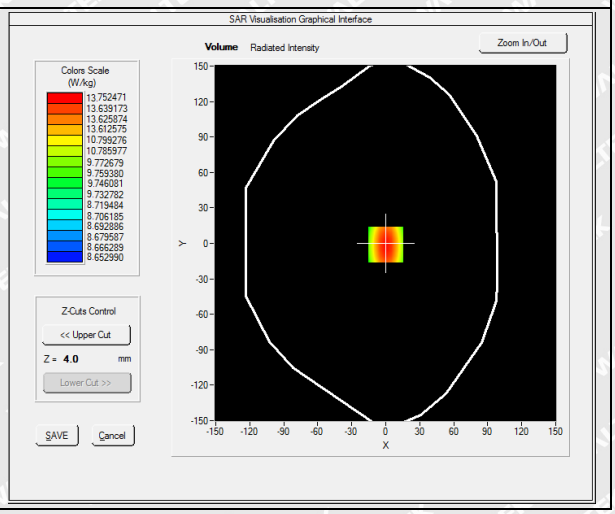
Type: Validation measurement (Fast, 75.00 %)
Measurement duration: 12 minutes 21 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020-07.03

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2450.000000
Relative Permittivity (real part)	38.153660
Conductivity (S/m)	1.740236
Power Variation (%)	1.141452
Ambient Temperature	21.1
Liquid Temperature	21.2

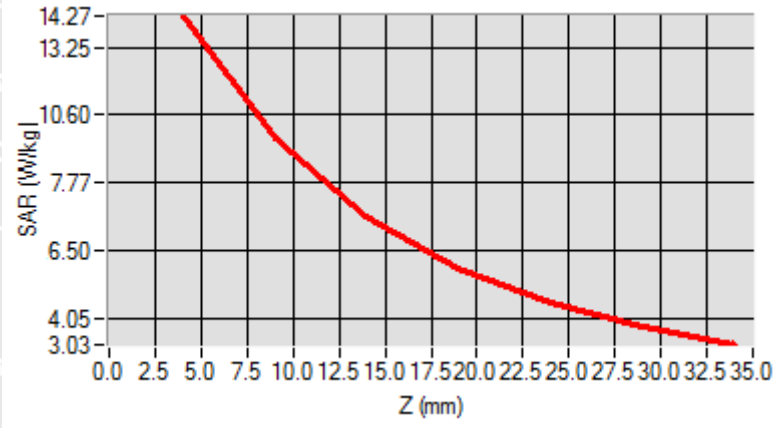
SURFACE SAR	VOLUME SAR
	

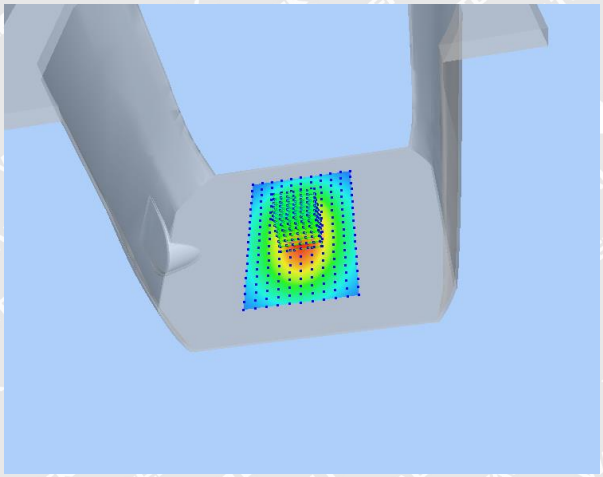
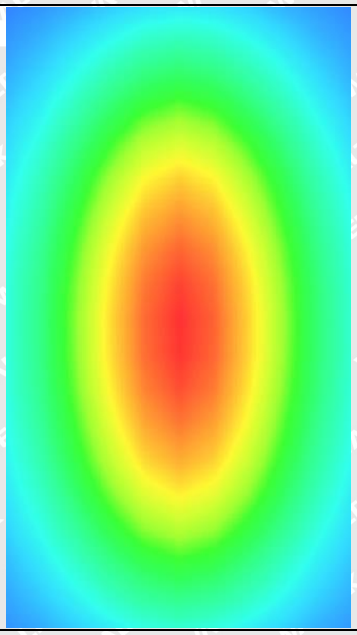
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	8.020427
SAR 1g (W/Kg)	13.452457

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	14.1034	12.0012	10.2624	7.4715	5.9022	4.5114



3D screen shot	Hot spot position
	

MEASUREMENT 6

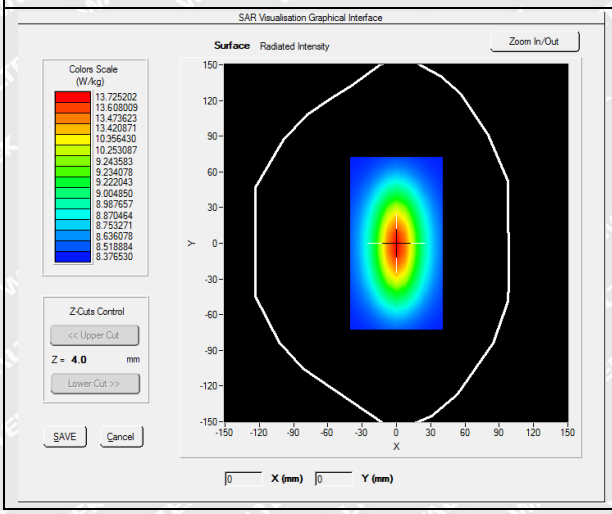
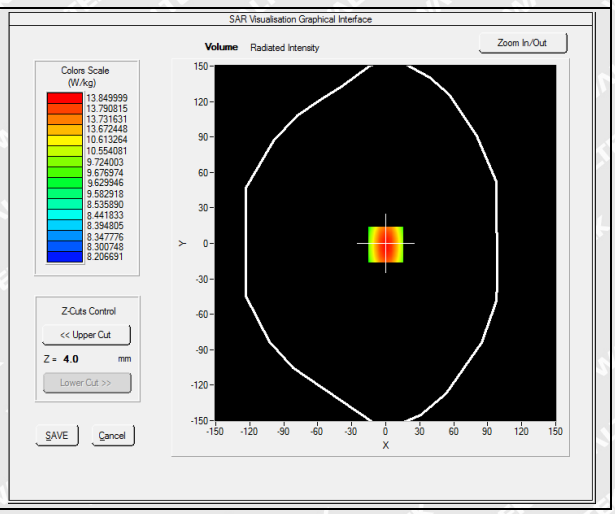
Type: Validation measurement (Fast, 75.00 %)
Measurement duration: 12 minutes 21 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020-07.03

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Phantom	Validation plane
Device Position	Dipole
Band	CW2600
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2600.000000
Relative Permittivity (real part)	38.631092
Conductivity (S/m)	1.930182
Power Variation (%)	1.028221
Ambient Temperature	21.1
Liquid Temperature	21.2

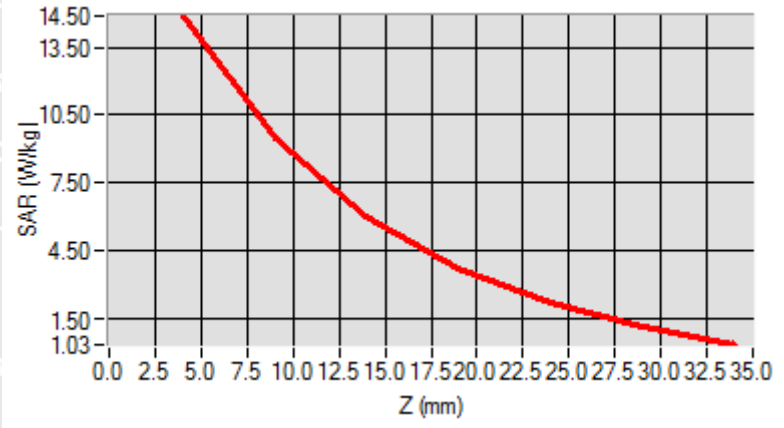
SURFACE SAR	VOLUME SAR
	

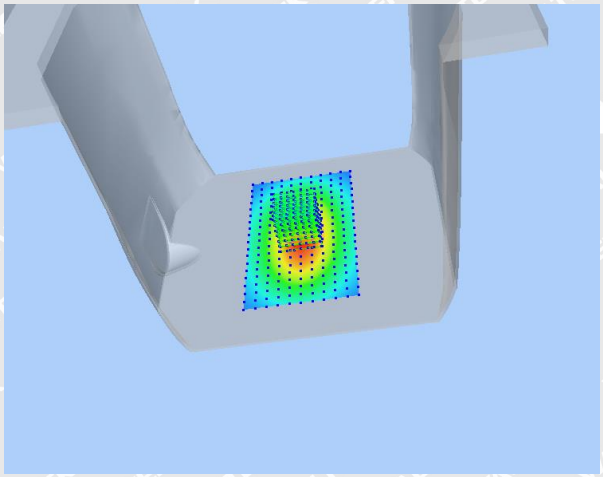
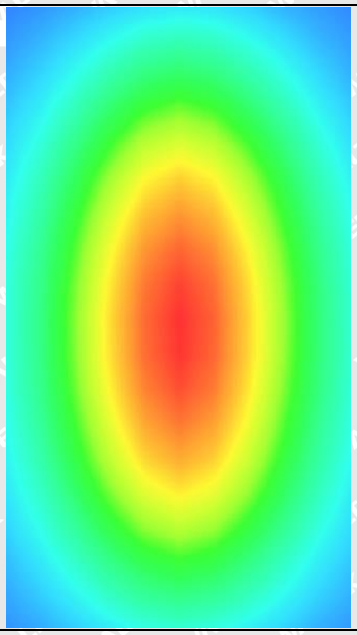
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	8.270822
SAR 1g (W/Kg)	13.670282

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	14.0426	12.1354	10.2965	7.4854	5.9354	4.5186



3D screen shot	Hot spot position
	

MEASUREMENT 7

Type: Validation measurement (Fast, 75.00 %)
Measurement duration: 12 minutes 21 seconds
E-field Probe: SN 45/15 EPGO280; ConvF: 5.64; Calibrated: 2020-07-03

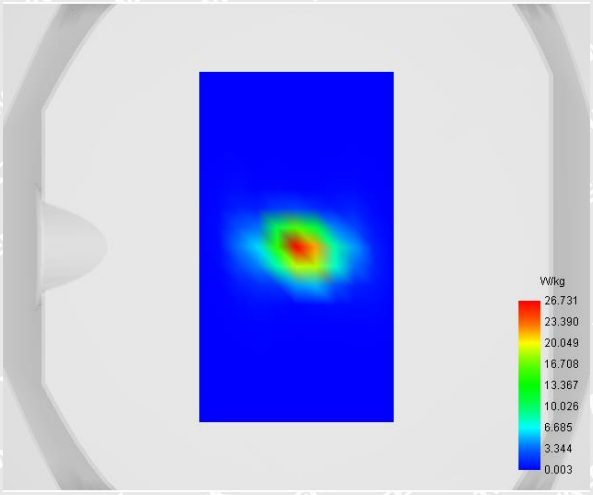
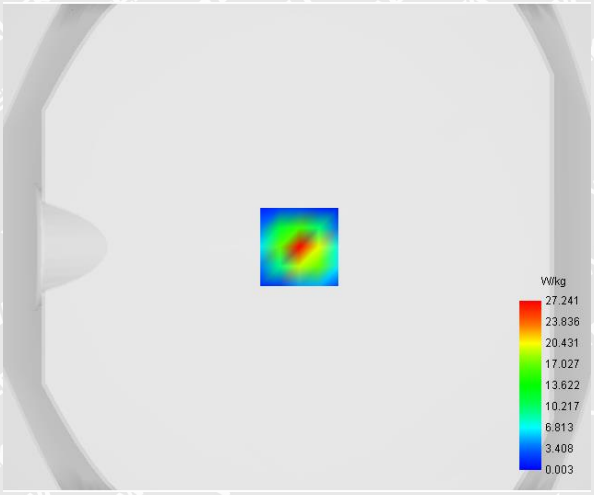
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Dipole
Band	CW5200
Signal	CW (Crest factor: 1.0)

B. SAR Measurement Results

Frequency (MHz)	5200.000000
Relative Permittivity (real part)	35.612911
Conductivity (S/m)	4.871483
Power Variation (%)	0.943782
Ambient Temperature	22.0
Liquid Temperature	22.3

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

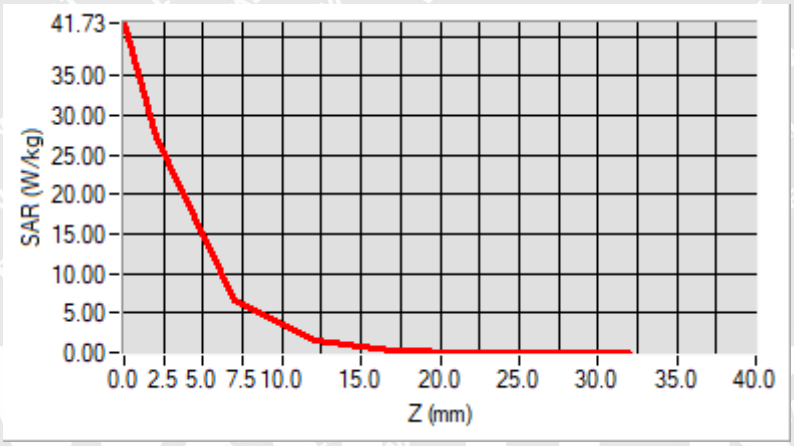
Maximum location: X=1.00, Y=0.00

D. SAR 1g & 10g

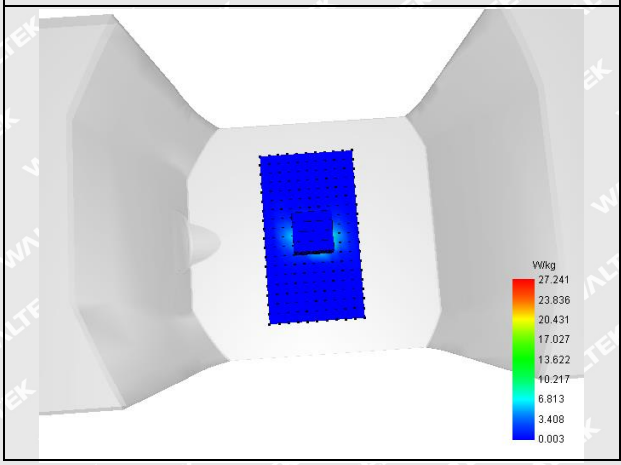
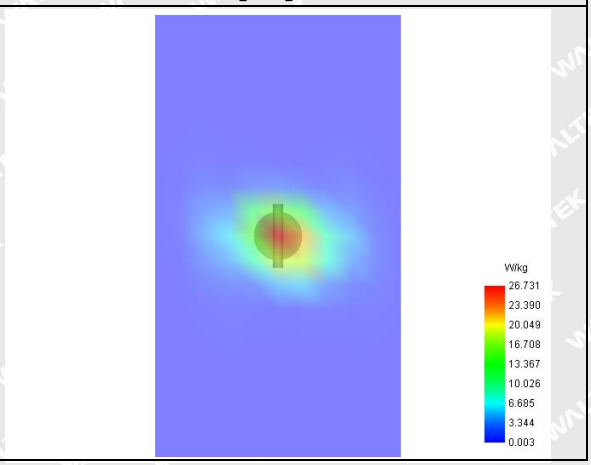
SAR 10g (W/Kg)	5.310334
SAR 1g (W/Kg)	16.946226

E. Z Axis Scan

Z (mm)	0.00	2.00	7.00	12.00	17.00	22.00	27.00
SAR (W/Kg)	41.7264	27.2408	6.5746	1.6234	0.3765	0.0793	0.0129



F. 3D Image

3D screen shot	Hot spot position
	

MEASUREMENT 8

Type: Validation measurement (Fast, 75.00 %)
Measurement duration: 12 minutes 21 seconds
E-field Probe: SN 45/15 EPGO280; ConvF: 5.64; Calibrated: 2020-07-03

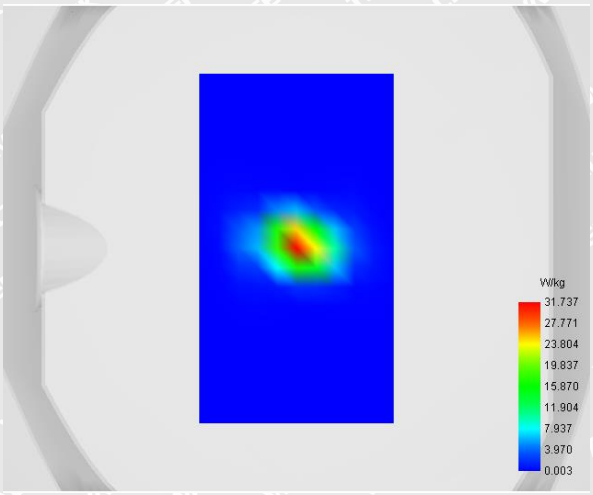
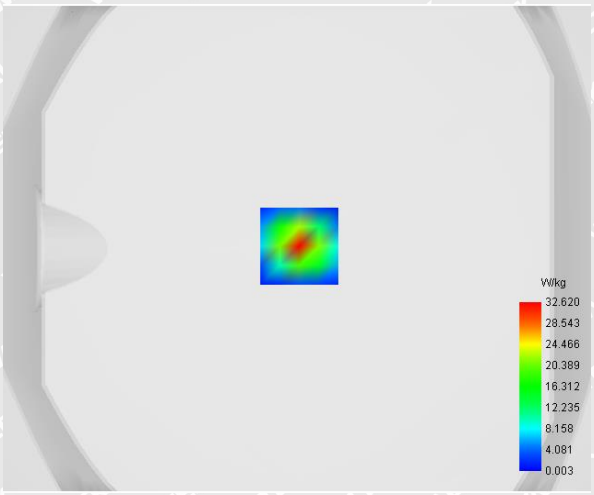
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Dipole
Band	CW5800
Signal	CW (Crest factor: 1.0)

B. SAR Measurement Results

Frequency (MHz)	5800.000000
Relative Permittivity (real part)	35.301254
Conductivity (S/m)	5.210512
Power Variation (%)	1.643281
Ambient Temperature	22.0
Liquid Temperature	22.3

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

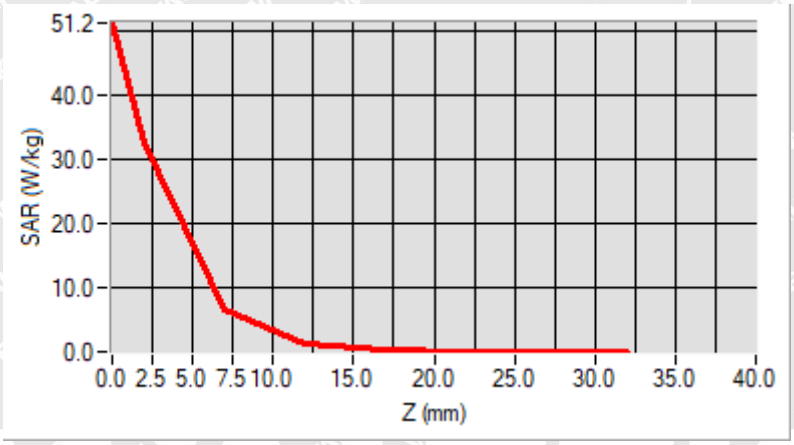
Maximum location: X=1.00, Y=1.00

D. SAR 1g & 10g

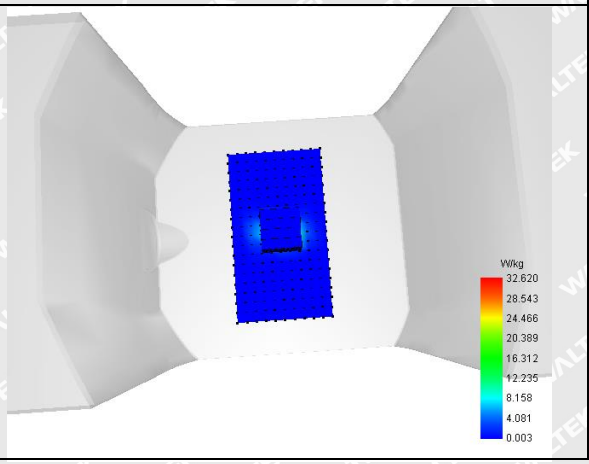
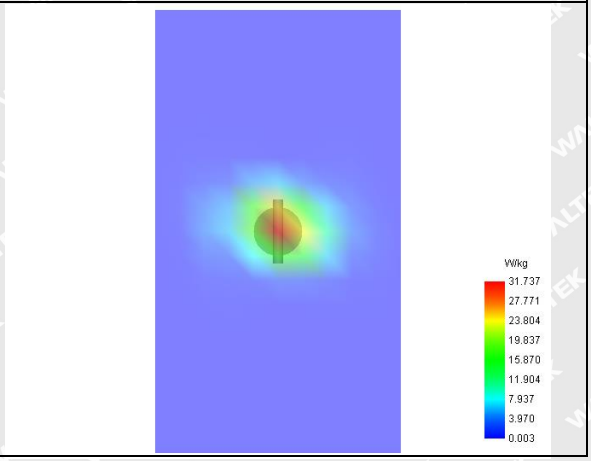
SAR 10g (W/Kg)	5.922791
SAR 1g (W/Kg)	18.604052

E. Z Axis Scan

Z (mm)	0.00	2.00	7.00	12.00	17.00	22.00	27.00
SAR (W/Kg)	51.2061	32.6198	6.6166	1.3486	0.2638	0.0509	0.0050



F. 3D Image

3D screen shot	Hot spot position
	

Annex B. Plots of SAR Measurement

TYPE	BAND	PARAMETERS
Phone	GSM850	Measurement 1: Right Head with Cheek device position on Middle Channel in GSM mode
Phone	GSM1900	Measurement 7: Left Head with Cheek device position on High Channel in GSM mode
Phone	GPRS850_2TX	Measurement 11: Right Head with Cheek device position on Middle Channel in GPRS mode
Phone	GPRS1900_2TX	Measurement 15: Left Head with Cheek device position on Middle Channel in GPRS mode
Phone	WCDMA1900_RMC	Measurement 19: Left Head with Cheek device position on High Channel in WCDMA mode
Phone	WCDMA850_RMC	Measurement 23: Left Head with Cheek device position on Low Channel in WCDMA mode
Phone	LTE Band 2_ QPSK	Measurement 31: Left Head with Cheek device position on High Channel in LTE mode
Phone	LTE Band 4_ QPSK	Measurement 35: Left Head with Cheek device position on Low Channel in LTE mode
Phone	LTE Band 7_ QPSK	Measurement 41: Right Head with Cheek device position on Low Channel in LTE mode
Phone	LTE Band 12_ QPSK	Measurement 49: Right Head with Cheek device position on Middle Channel in LTE mode
Phone	LTE Band 13_ QPSK	Measurement 57: Right Head with Cheek device position on High Channel in LTE mode
Phone	LTE Band 17_ QPSK	Measurement 71: Left Head with Cheek device position on Low Channel in LTE mode
Phone	LTE Band 41_ QPSK	Measurement 75: Left Head with Cheek device position on High Channel in LTE mode
Phone	5.2G WiFi_802.11a	Measurement 83: Left Head with Cheek device position on High Channel in 802.11a mode
Phone	5.8G WiFi_802.11n (HT20)	Measurement 85: Right Head with Cheek device position on Low Channel in 802.11a mode
Phone	GSM850	Measurement 89: Flat Plane with Back device position on Middle Channel in GSM mode
Phone	GSM1900	Measurement 92: Flat Plane with Front device position on High Channel in GSM mode
Phone	WCDMA1900_RMC	Measurement 94: Flat Plane with Front side device position on High Channel in WCDMA mode
Phone	WCDMA850_RMC	Measurement 95: Flat Plane with back side device position on Low Channel in WCDMA mode

Phone	**LTE Band 2_ QPSK**	Measurement 97: Flat Plane with Back device position on High Channel in LTE mode
Phone	**LTE Band 4_ QPSK**	Measurement 102: Flat Plane with Front device position on Low Channel in LTE mode
Phone	**LTE Band 7_ QPSK**	Measurement 105: Flat Plane with Back device position on Low Channel in LTE mode
Phone	**LTE Band 12_ QPSK**	Measurement 109: Flat Plane with Back device position on Middle Channel in LTE mode
Phone	**LTE Band 13_ QPSK**	Measurement 114: Flat Plane with Front device position on High Channel in LTE mode
Phone	**LTE Band 17_ QPSK**	Measurement 118: Flat Plane with Front device position on Low Channel in LTE mode
Phone	**LTE Band 41_ QPSK**	Measurement 121: Flat Plane with Back device position on High Channel in LTE mode
Phone	**5.2G WiFi_802.11a**	Measurement 125: Flat Plane with Back device position on High Channel in WiFi_802.11a mode
Phone	**5.8G WiFi_802.11n(HT20)**	Measurement 130: Flat Plane with Back device position on Low Channel in WiFi_802.11n mode
Phone	**GPRS850_2TX**	Measurement 131: Flat Plane with Back device position on Middle Channel in GPRS mode
Phone	**GPRS1900_2TX**	Measurement 140: Flat Plane with Bottom device position on Low Channel in GPRS mode
Phone	**WCDMA1900_RMC**	Measurement 142: Flat Plane with Bottom side device position on High Channel in WCDMA mode
Phone	**WCDMA850_RMC**	Measurement 146: Flat Plane with back side device position on Low Channel in WCDMA mode
Phone	**LTE Band 2_ QPSK**	Measurement 155: Flat Plane with bottom side device position on High Channel in LTE mode
Phone	**LTE Band 4_ QPSK**	Measurement 162: Flat Plane with Front side device position on Low Channel in LTE mode
Phone	**LTE Band 7_ QPSK**	Measurement 175: Flat Plane with Bottom side device position on Low Channel in LTE mode
Phone	**LTE Band 12_ QPSK**	Measurement 181: Flat Plane with Back side device position on Middle Channel in LTE mode
Phone	**LTE Band 13_ QPSK**	Measurement 192: Flat Plane with Front side device position on High Channel in LTE mode
Phone	**LTE Band 17_ QPSK**	Measurement 202: Flat Plane with Front side device position on Low Channel in LTE mode
Phone	**LTE Band 41_ QPSK**	Measurement 215: Flat Plane with Bottom side device position on High Channel in LTE mode
Phone	**5.2G WiFi_802.11a**	Measurement 224: Flat Plane with Top side device position on High Channel in WiFi_802.11a mode
Phone	**5.8G WiFi_802.11n(HT20)**	Measurement 230: Flat Plane with Back side device

		position on Low Channel in WiFi_802.11n mode
Remark: SAR plot is showed the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.		

MEASUREMENT 1

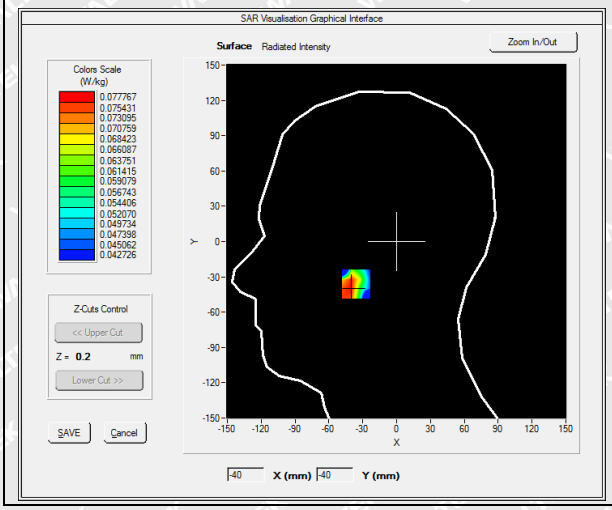
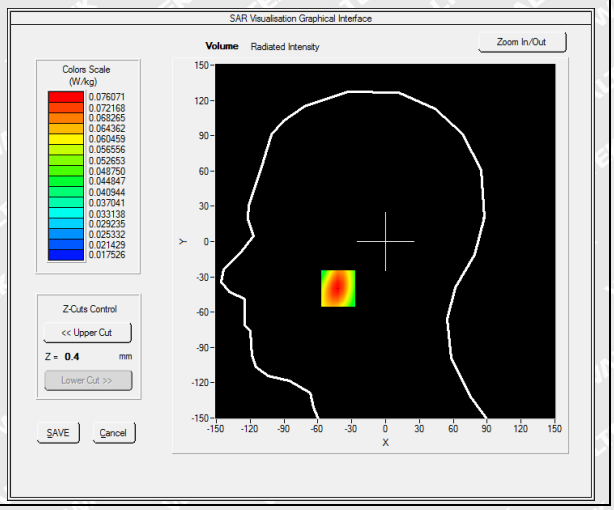
Type: Phone measurement (Complete)
Date of measurement: 2021-05-26
Measurement duration: 11 minutes 48 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020-07-03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	GSM850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)

B. SAR Measurement Results

Frequency (MHz)	836.599976
Relative Permittivity (real part)	41.110245
Conductivity (S/m)	0.871245
Power Variation (%)	1.144536
Ambient Temperature	21.1
Liquid Temperature	21.3

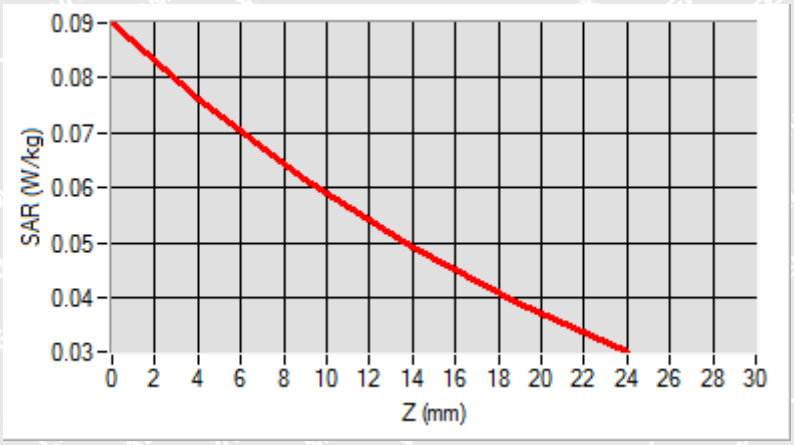
SURFACE SAR	VOLUME SAR
	

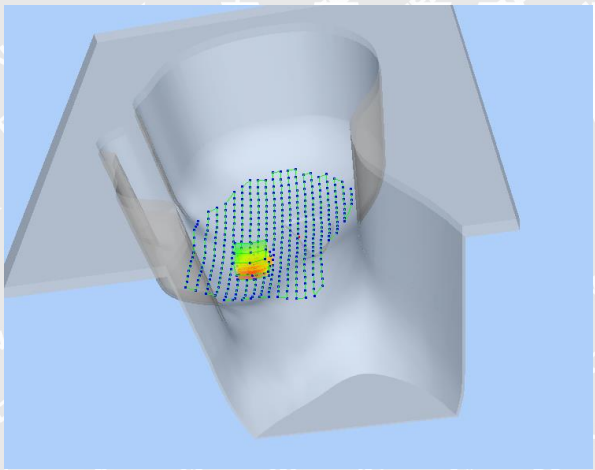
Maximum location: X=-42.00, Y=-40.00

SAR Peak: 0.09 W/kg

SAR 10g (W/Kg)	**0.054467**
SAR 1g (W/Kg)	**0.072459**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0899**	**0.0761**	**0.0613**	**0.0491**	**0.0389**



3D screen shot	**Hot spot position**
	

MEASUREMENT 7

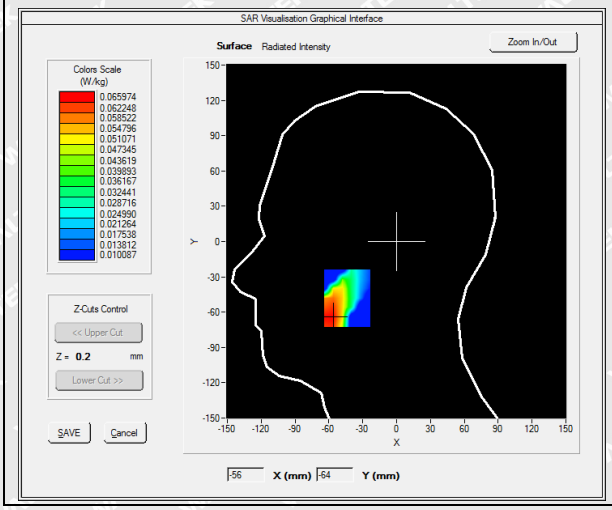
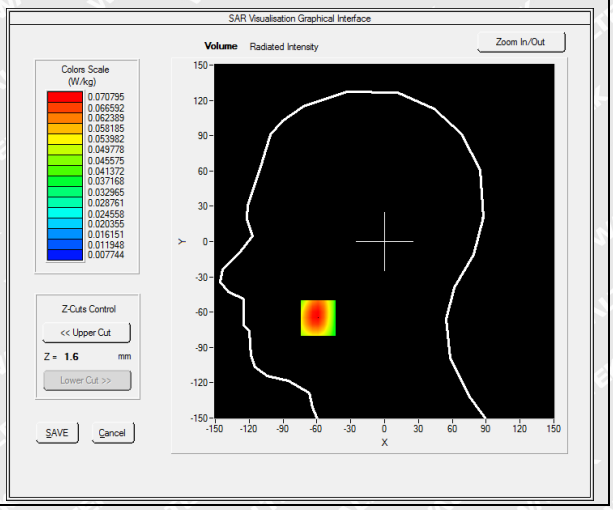
Type: Phone measurement (Complete)
Date of measurement: 2021-05.28
Measurement duration: 11 minutes 48 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020-07-03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	GSM1900
Channels	High
Signal	TDMA (Crest factor: 8.0)

B. SAR Measurement Results

Frequency (MHz)	1909.800000
Relative Permittivity (real part)	38.560124
Conductivity (S/m)	1.380369
Power Variation (%)	1.442440
Ambient Temperature	21.1
Liquid Temperature	21.3

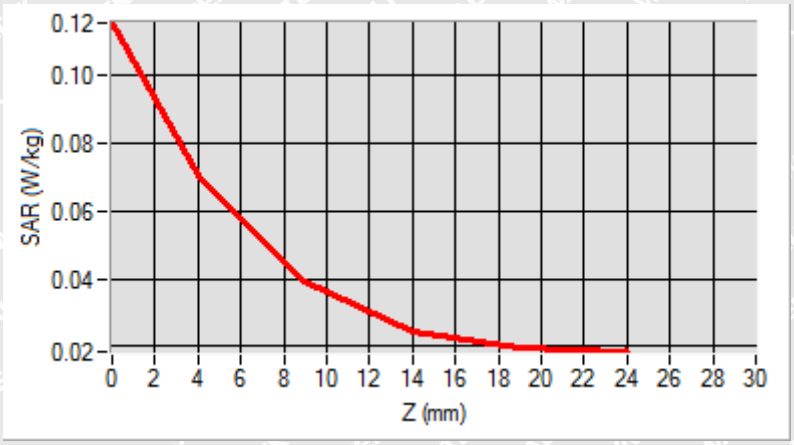
SURFACE SAR	VOLUME SAR
	

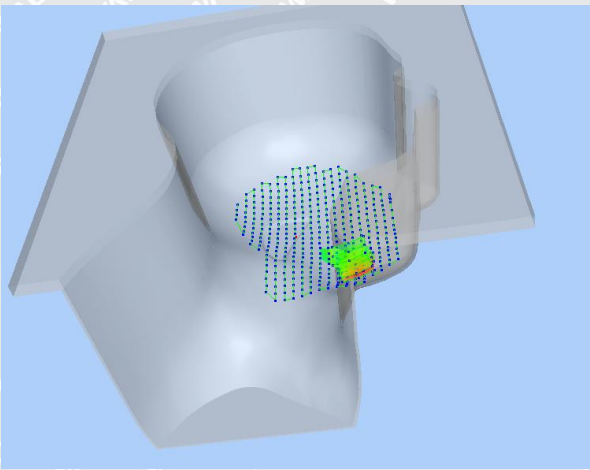
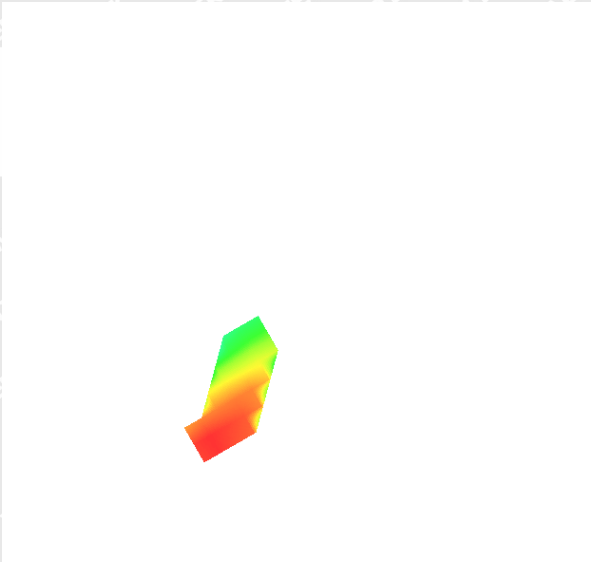
Maximum location: X=-59.00, Y=-65.00

SAR Peak: 0.12 W/kg

SAR 10g (W/Kg)	**0.042475**
SAR 1g (W/Kg)	**0.069531**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.1155**	**0.0708**	**0.0390**	**0.0246**	**0.0197**



3D screen shot	**Hot spot position**
	

MEASUREMENT 11

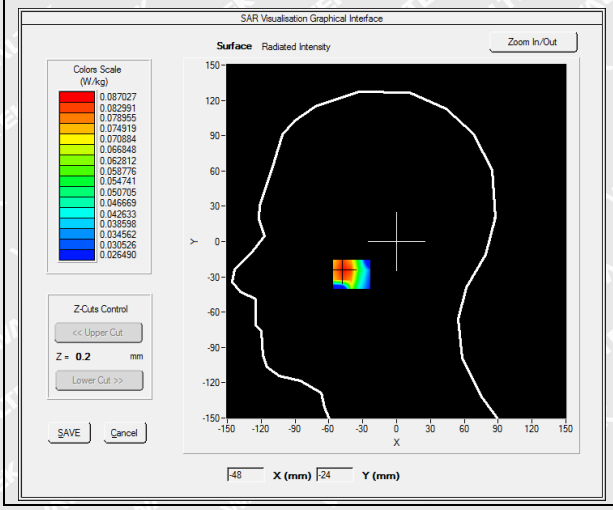
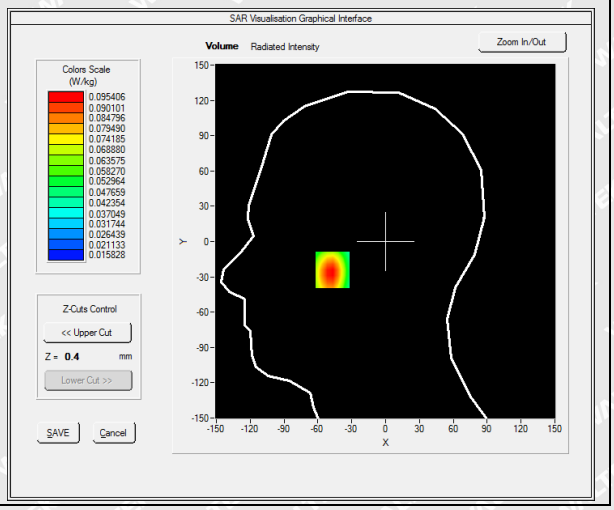
Type: Phone measurement (Complete)
Date of measurement: 2021-05-26
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020-07-03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	GPRS850_2TX
Channels	Middle
Signal	Duty Cycle: 1:4

B. SAR Measurement Results

Frequency (MHz)	836.599976
Relative Permittivity (real part)	41.110245
Conductivity (S/m)	0.871245
Power Variation (%)	1.536272
Ambient Temperature	21.1
Liquid Temperature	21.3

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-47.00, Y=-24.00