FCC SAR TEST REPORT

Report No.:	SET2020-06522
Product:	WCDMA/GSM（GPRS）Multi-mode Digital Mobile Phone
Trade Name:	ZTE
Model No.:	ZTE Blade L210
Marketing Name:	ZTE BLADE L210, ZTE Blade L210, ZTE blade L210
FCC ID:	SRQ-ZTEL210M
Applicant:	ZTE CORPORATION
Address:	ZTE Plaza, Keji Road South, Shenzhen, China.
Issued by:	CCIC Southern Testing Co., Ltd.
Lab Location:	Electronic Testing Building, No. 43 Shahe Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China.
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Test Report

Product. ……..:	WCDMA/GSM（GPRS）Multi-mode Digital Mobile Phone
Model No. ……..:	ZTE Blade L210
Brand Name……..:	ZTE
FCC ID…….……:	SRQ-ZTEL210M
Applicant……..:	ZTE CORPORATION
Applicant Address…….:	ZTE Plaza, Keji Road South, Shenzhen, China
Manufacturer……:	ZTE CORPORATION
Manufacturer Address:	ZTE Plaza, Keji Road South, Shenzhen, China
Test Standards…….:	**47CFR §2.1093-** Radiofrequency Radiation Exposure Evaluation: Portable Devices; **ANSI C95.1–1992:** Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.(IEEE Std C95.1-1991) **IEEE 1528–2013:** IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
Test Result……:	Pass
Test Date……:	2020.06.16-2020.06.20

Tested by ……..: Mei Chun 2020-06-23

Mei Chun, Test Engineer

Reviewed by…….: Chris You 2020-06-23

Chris You, Senior Engineer

Approved by……: Shuangwen Zhang 2020-06-23

Shuangwen Zhang, Manager

Contents

1. Administrative Data

1.1 Testing Laboratory

Test Site:	CCIC Southern Testing Co., Ltd.
Address:	Electronic Testing Building, No. 43 Shahe Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China
CNAS Lab Code:	CCIC-SET is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659.
NVLAP Lab Code:	CCIC-SET is a third party testing organization accredited by NVLAP according to ISO/IEC 17025. The accreditation certificate number is 201008-0.
FCC Registration:	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. Designation Number: CN5031, valid time is until December 31, 2020.
ISED Registration:	EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A-1 on Aug. 04, 2016, valid time is until December 31, 2020.
Test Environment Condition:	Temperature (℃): 21℃ Relative Humidity (%): 60% Atmospheric Pressure (kPa): 86KPa-106KPa

2. Equipment Under Test (EUT)

Identification of the Equipment under Test

Device Type:	Portable	
Exposure Category:	Population/Uncontrolled	
Sample Name:	WCDMA/GSM（GPRS）Multi-mode Digital Mobile Phone	
Brand Name:	ZTE	
Model Name:	ZTE Blade L210	
General description:	Support Band	GSM850/900/1800/1900MHz, WCDMA 850MHz/1900MHz WIFI 2.4G, BT,GPS
	Test Band	GSM850MHz/1900MHz, WCDMA 850MHz/1900MHz, WIFI 2.4G, BT,GPS
	IMEI	863685040002275
	Device Class	Class B
	Multi Class	GPRS: Class 12; EGPRS: Class 12
	Development Stage	Identical Prototype
	Accessories	Power Supply
	Hotspot	2.4GHz WLAN support Hotspot mode
	Antenna type	Internal Antenna
	Operation mode	GSM /WCDMA/WIFI
	Modulation mode	GSM(GMSK),UMTS(QPSK)WIFI(OFDM/DSSS), BT(GFSK/π/4-DQPSK/8-DPSK)
	DTM mode	Not support
	Hardware Version	urrA
	Software Version	TEL_MX_ZTE_Blade_L210V1.0
	Battery options :	Model No.: Li3839T44P8h866445
	Max. SAR Value	Head: 0.971 W/Kg Body: 0.904 W/Kg(Limit:1.6W/Kg, 10mm distance)

NOTE:

a. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

EUT testing configuration

Tested frequency range(s)	Transmitter Frequency Range	Receiver Frequency Range
GSM850:	824-849 MHz	869-894 MHz
GSM1900:	1850-1910 MHz	1930-1990 MHz
UMTS Band II:	1850-1910 MHz	1930-1990 MHz
UMTS Band V:	824-849 MHz	869-894 MHz
WIFI(tested):	2412-2462 MHz	
Bluetooth:	2402-2480 MHz	
Test channels(low-mid-high):	128-190-251(GSM850)	
	512-661-810(GSM1900)	
	9262-9400-9538(UMTS Band II)	
	4132-4183-4233(UMTS Band V)	
	1-6-11(Wi-Fi 2.4G 802.11b)	
	0-39-78(BT)	

3. SAR Summary

Highest Standalone SAR Summary

Exposure Position	Frequency Band	Scaled 1g-SAR(W/kg)	Highest Scaled 1g-SAR(W/kg)
Head	GSM850	0.971	0.971
	GSM1900	0.745	
	WCDMA Band II	0.546	
	WCDMA Band V	0.953	
	2.4G WIFI	0.321	

Exposure Position	Frequency Band	Scaled 1g-SAR(W/kg)	Highest Scaled 1g-SAR(W/kg)
Body-worn (10mm Gap)	GSM850	0.299	0.904
	GSM1900	0.692	
	WCDMA Band II	0.904	
	WCDMA Band V	0.272	
	2.4G WIFI	0.278	

Exposure Position	Frequency Band	Scaled 1g-SAR(W/kg)	Highest Scaled 1g-SAR(W/kg)
Hotspot (10mm Gap)	GSM850	0.299	0.904
	GSM1900	0.692	
	WCDMA Band II	0.904	
	WCDMA Band V	0.272	
	2.4G WIFI	0.278	

Highest Simultaneous SAR Summary

Exposure Position	Frequency Band	Highest Scaled 1g-SAR(W/kg)
Head	WWAN(GSM850)&WIFI	1.271

4. Specific Absorption Rate (SAR)

4.1 Introduction

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

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 (). The equation description is as below:

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

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

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

$$\mathrm{SAR} = C\frac{\delta T}{\delta t}$$

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

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

where σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the rms electrical field strength.

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

4.2 Applicable Standards and Limits

4.2.1 Applicable Standards

47CFR §2.1093	Radiofrequency Radiation Exposure Evaluation: Portable Devices
ANSI C95.1–1992	Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.(IEEE Std C95.1-1991)
IEEE 1528–2013	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
KDB 248227 D01	v02r02 802.11 Wi-Fi SAR
KDB 447498 D01	v06 General RF Exposure Guidance
KDB 648474 D04	v01r03 Handset SAR
KDB 865664 D01	v01r04 SAR Measurement 100MHz to 6GHz
KDB 865664 D02	v01r02 SAR Exposure Reporting
KDB 941225 D01	v03r01 3G SAR Procedures
KDB 941225 D06	v02r01 Hotspot Mode

4.2.2 RF exposure Limits

Human Exposure	**Uncontrolled Environment General Population**
Spatial Peak SAR* (Brain/Body)	**1.60 mW/g**
Spatial Average SAR** (Whole Body)	0.08 mW/g
Spatial Peak SAR*** (Limbs)	4.00 mW/g

The limit applied in this test report is shown in bold letters.

Notes:

* The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time

** The Spatial Average value of the SAR averaged over the whole body.

*** The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

4.3 Phantoms

The phantom used for all tests i.e. for both system checks and device testing, was the twin-headed "SAM Phantom", manufactured by SATIMO. The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region, where shell thickness increases to 6mm).

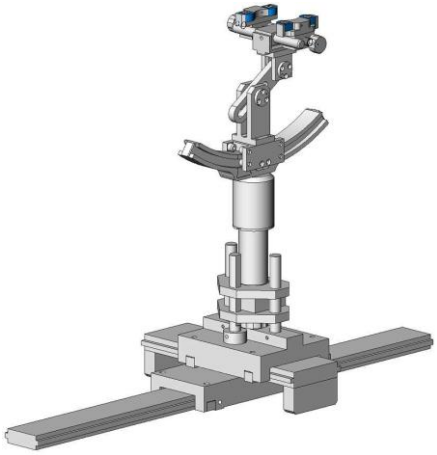
System checking was performed using the flat section, whilst Head SAR tests used the left and right head profile sections. Body SAR testing also used the flat section between the head profiles.

SAM Twin Phantom

4.4 Device Holder

The device was placed in the device holder (illustrated below) that is supplied by SATIMO as an integral part of the COMOSAR test system.

The device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.



Device holder

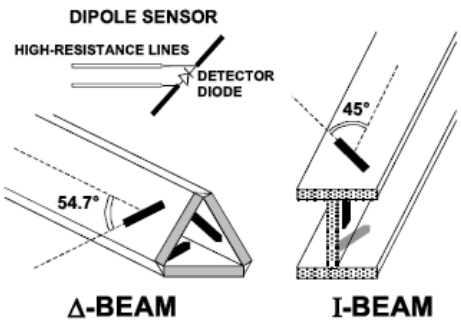
4.5 Probe Specification

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available.
Frequency	700 MHz to 3 GHz; Linearity: ±0.5 dB (700 MHz to 3 GHz)
Directivity	±0.25 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	1.5 μW/g to 100 mW/g; Linearity: ±0.5 dB
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 5 mm Distance from probe tip to dipole centers: <2.7 mm
Application	General dosimetry up to 3 GHz Dosimetry in strong gradient fields Compliance tests of mobile phones
Compatibility	COMOSAR

Isotropic E-Field Probe

The isotropic E-Field probe has been fully calibrated and assessed for isotropicity, and boundary effect within a controlled environment. Depending on the frequency for which the probe is calibrated the method utilized for calibration will change.

The E-Field probe utilizes a triangular sensor arrangement as detailed in the diagram below:



5. Tissue check and recommend Dielectric Parameters

5.1 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 Power drifts 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.

Table 1: Recommended Dielectric Performance of Tissue

Ingredients (% by weight)	Frequency (MHz)											
	450		835		915		1900		2450		2600	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.46	52.4	41.05	56.0	54.9	40.4	62.7	73.2	55.24	64.49
Salt (Nacl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04	0.5	0.024
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0	0.0	0.0
Triton x-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0	44.45	32.25
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.2	52.5	39.0	52.5
Conductivity (s/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.80	1.78	1.96	2.16

MSL/HSL750 (Body and Head liquid for 650 – 850 MHz)

Item	Head Tissue Simulation Liquid HSL750 Muscle(body)Tissue Simulation Liquid MSL750
H2O	Water, 35 – 58%
Sucrese	Sugar, white, refined, 40-60%
NaCl	Sodium Chloride, 0-6%
Hydroxyethel-cellulsoe	Medium Viscosity (CAS# 9004-62-0), <0.3%
Preventol-D7	Preservative: aqueous preparation, (CAS# 55965-84-9), containing 5-chloro-2-methyl-3(2H)-isothiazolone and 2-methyyl-3(2H)-isothiazolone, 0.1-0.7%

Frequency (MHz)	Head εr	Head σ(S/m)	Body εr	Bodyσ(S/m)
750	41.9	0.89	55.2	0.97

Note: The liquid of 700MHz&2600MHz typical liquid composition is provided by SATIMO.

Frequency:5200/5400/5600/5800MHz	
Ingredients	(% by weight)
Water	78
Mineral oil	11
Emulsifiers	9
Additives and Salt	2

Table 2 Recommended Tissue Dielectric Parameters

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

5.2 Simulate liquid

Liquid check results:

Table 3: Dielectric Performance of Head Tissue Simulating Liquid

Temperature: 23.2 ℃; Humidity: 64%;			
/	Frequency	Permittivity ε	Conductivity σ (S/m)
Target value	835MHz	41.5±5%	0.90±5%
Validation value (2020-06-16)	835MHz	41.52	0.91
Target value	1900MHz	40.5±5%	1.40±5%
Validation value (2020-06-18)	1900MHz	40.47	1.37
Target value	2450MHz	39.2±5%	1.80±5%
Validation value (2020-06-20)	2450MHz	39.22	1.81

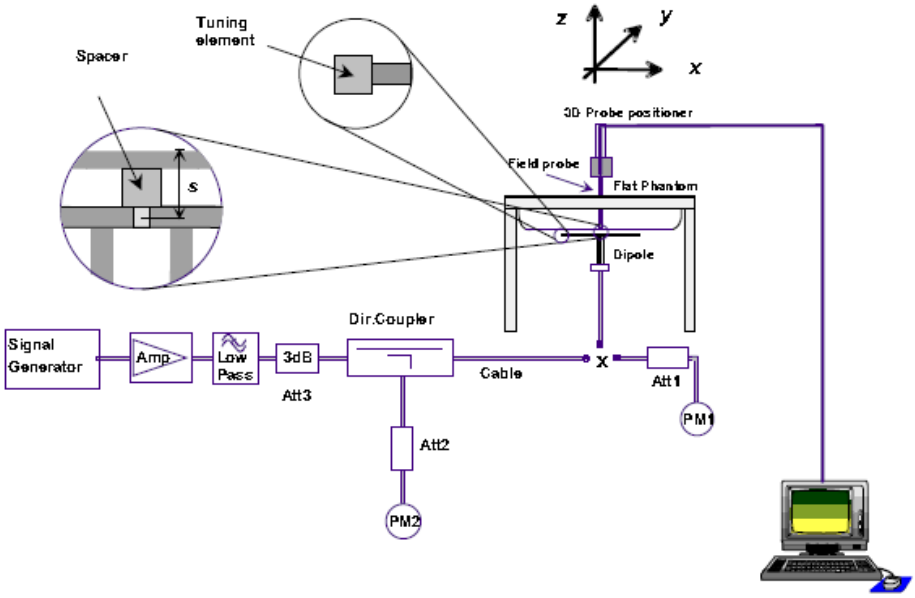
Dielectric Performance of Body Tissue Simulating Liquid

Temperature: 23.2 ℃; Humidity: 64%;			
/	Frequency	Permittivity ε	Conductivity σ (S/m)
Target value	835MHz	55.2±5%	0.97±5%
Validation value (2020-06-16)	835MHz	55.23	0.99
Target value	1900MHz	53.3±5%	1.52±5%
Validation value (2020-06-18)	1900MHz	53.26	1.48
Target value	2450MHz	52.7±5%	1.95±5%
Validation value (2020-06-20)	2450MHz	52.69	1.94

SAR System validation

Prior to the assessment, the system validation kit was used to test whether the system was operating within its specifications of ±10%. The validation results are tabulated below. And also the corresponding SAR plot is attached as well in the SAR plots files.

The following procedure, recommended for performing validation tests using box phantoms is based on the procedures described in the IEEE standard P1528. Setup according to the setup diagram below:



With the SG and Amp and with directional coupler in place, set up the source signal at the relevant frequency and use a power meter to measure the power at the end of the SMA cable that you intend to connect to the balanced dipole. Adjust the SG to make this, say, 0.01W (10 dBm). If this level is too high to read directly with the power meter sensor, insert a calibrated attenuator (e.g. 10 or 20 dB) and make a suitable correction to the power meter reading.

Note 1: In this method, the directional coupler is used for monitoring rather than setting the exact feed power level. If, however, the directional coupler is used for power measurement, you should check the frequency range and power rating of the coupler and measure the coupling factor (referred to output) at the test frequency using a VNA.

Note 2: Remember that the use of a 3dB attenuator (as shown in Figure 8.1 of P1528) means that you need an RF amplifier of 2 times greater power for the same feed power. The other issue is the cable length. You might get up to 1dB of loss per meter of cable, so the cable length after the coupler needs to be quite short.

Note 3: For the validation testing done using CW signals, most power meters are suitable. However, if you are measuring the output of a modulated signal from either a signal generator or a handset, you must ensure that the power meter correctly reads the modulated signals.

The measured 1-gram averaged SAR values of the device against the phantom are provided in Tables 5 and Table 6. The humidity and ambient temperature of test facility were 64% and 23.2 ℃ respectively. The body phantom were full of the body tissue simulating liquid. The EUT was supplied with full-charged battery for each measurement.

The distance between the back of the EUT and the bottom of the flat phantom is 10 mm (taking into account of the IEEE 1528 and the place of the antenna).

Table 4: Head SAR system validation (1g)

Frequency	Duty cycle	Target value （W/kg）	Test value (W/kg)	
			10 mW	1W
835MHz(2020-06-16)	1:1	9.61±10%	0.0964	9.64
1900MHz(2020-06-18)	1:1	39.35±10%	0.3730	37.30
2450MHz(2020-06-20)	1:1	52.67±10%	0.4961	49.61

Body SAR system validation (1g)

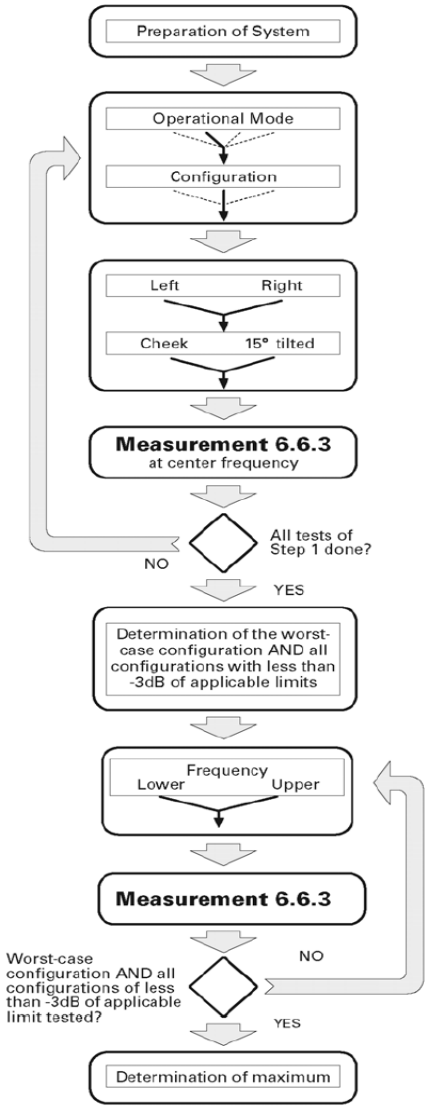
Frequency	Duty cycle	Target value （W/kg）	Test value (W/kg)	
			10 mW	1W
835MHz(2020-06-16)	1:1	9.88±10%	0.1004	10.04
1900MHz(2020-06-18)	1:1	38.84±10%	0.4093	40.93
2450MHz(2020-06-20)	1:1	51.42±10%	0.5480	54.80

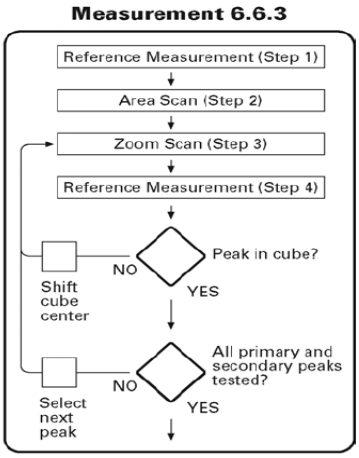
* Note: Target value was referring to the measured value in the calibration certificate of reference dipole.

Note: All SAR values are normalized to 1W forward power.

6. SAR measurement procedure

The SAR test against the head phantom was carried out as follow:





Establish a call with the maximum output power with a base station simulator, the connection between the EUT and the base station simulator is established via air interface.

After an area scan has been done at a fixed distance of 2mm from the surface of the phantom on the source side, a 3D scan is set up around the location of the maximum spot SAR. First, a point within the scan area is visited by the probe and a SAR reading taken at the start of testing. At the end of testing, the probe is returned to the same point and a second reading is taken. Comparison between these start and end readings enables the power drift during measurement to be assessed.

Above is the scanning procedure flow chart and table from the IEEEp1528 standard. This is the procedure for which all compliant testing should be carried out to ensure that all variations of the device position and transmission behavior are tested.

7. Conducted RF Output Power

7.1 GSM Conducted Power

GSM850		Burst-Averaged output Power (dBm)			Division Factors	Frame-Averaged output Power (dBm)		
		128CH	190CH	251CH		28CH	190CH	251CH
GSM (CS)		32.30	32.50	32.40	-9.03	23.27	23.47	23.37
GPRS (GMSK)	1 Tx Slot	32.26	32.48	32.35	-9.03	23.23	23.45	23.32
	2 Tx Slots	30.37	30.56	30.48	-6.02	24.35	24.54	24.46
	3 Tx Slots	28.56	28.75	28.63	-4.26	24.30	24.49	24.37
	4 Tx Slots	27.43	27.61	27.52	-3.01	24.42	24.60	24.51
GSM1900		Burst-Averaged output Power (dBm)			Division Factors	Frame-Averaged output Power (dBm)		
		512CH	661CH	810CH		512CH	661CH	810CH
GSM (CS)		28.53	28.74	28.43	-9.03	19.50	19.71	19.40
GPRS (GMSK)	1 Tx Slot	28.50	28.86	28.58	-9.03	19.47	19.83	19.55
	2 Tx Slots	26.33	26.54	26.40	-6.02	20.31	20.52	20.38
	3 Tx Slots	24.45	24.64	24.53	-4.26	20.19	20.38	20.27
	4 Tx Slots	23.33	23.55	23.40	-3.01	20.32	20.54	20.39

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

For hotspot SAR, EUT was performed at GPRS Class 12 multi-slots(4Tx) mode

For Head and Body-worn SAR testing, EUT was set in GSM Voice mode for both GSM850 and GSM1900

Timeslot consignations

No. Of Slots	Slot 1	Slot 2	Slot 3	Slot 4
Slot Consignation	1Up4Down	2UpDown	3UpDown	4Up1Down
Duty Cycle	1:8	1:4	1:2.67	1:2
Crest Factor	-9.03dB	-6.02dB	-4.26dB	-3.01dB

7.2 WCDMA Conducted output Power

UMTS1900 (Band II)		Average Power (dBm)		
		9262CH	9400CH	9538cH
WCDMA	12.2kbps RMC	22.70	22.54	22.61
HSDPA	Subtest 1	22.61	22.45	22.50
	Subtest 2	22.53	22.36	22.43
	Subtest 3	22.41	22.26	22.31
	Subtest 4	22.33	22.15	22.22
HSUPA	Subtest 1	22.20	22.07	22.10
	Subtest 2	22.12	21.95	22.03
	Subtest 3	22.01	21.83	21.90
	Subtest 4	21.93	21.77	21.83
	Subtest 5	21.80	21.65	21.72
UMTS850 (Band V)		Average Power (dBm)		
		4132CH	4183CH	4233CH
WCDMA	12.2kbps RMC	22.66	22.46	22.51
HSDPA	Subtest 1	22.55	22.38	22.43
	Subtest 2	22.46	22.29	22.31
	Subtest 3	22.37	22.18	22.22
	Subtest 4	22.26	22.07	22.13
HSUPA	Subtest 1	22.15	21.98	22.00
	Subtest 2	22.04	21.86	21.94
	Subtest 3	21.93	21.75	21.82
	Subtest 4	21.84	21.66	21.71
	Subtest 5	21.76	21.58	21.60

Note:

1. WCDMA SAR was tested under RMC 12.2kbps with HSPA Inactive per KDB Publication 941225 D01v03r01.HSPA SAR was not requires since the average output power of the HSPA subtests was not more than 0.25dB higher than the RMC level and SAR was less than 1.2W/kg.
2. It is expected by the manufacturer that MPR for some HSPA subtests may be up to 2dB more than specified by 3GPP, but also as low as 0dB according to the chipset implementation in this model

7.3 WIFI Conducted Power

WLAN 2.4GHz Band Conducted Power

Channel/Freq.(MHz)	Maximum Conducted Out Power (dBm)		
	802.11b	802.11g	802.11n(HT20)
1(2412)	17.12	15.48	12.58
6(2437)	18.23	15.51	12.84
11(2462)	17.64	15.81	12.54

7.4 Bluetooth Output Power

Channel	Frequency (MHz)	BT3.0 Output Power(dBm)		
		GFSK	π/4-DQPSK	8-DPSK
CH 0	2402	8.03	8.52	8.18
CH 39	2441	7.74	8.49	8.19
CH 78	2480	7.09	7.86	7.69
Channel	Frequency (MHz)	BT4.0 Output Power(dBm)		
		GFSK		
CH 0	2402	6.032		
CH 20	2442	5.922		
CH 39	2480	5.35		

Note:

1. Per KDB248227 D01 v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion
2. For each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 1/4dB higher than those measured at lowest data rate
3. Per KDB248227 D01 v02r02, 802.11g /11n-HT20/11n-HT40 is not required. . When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤1.2W/Kg. Thus the SAR can be excluded.

8. SAR test Exclusion and estimate SAR calculation:

Note:

1. Per KDB 447498 D01v06, the 1-g and 10-g SAR test exclusion thresholds for 100MHz to 6GHz at test separation distances ≤ 50mm are determined by:[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] [$\sqrt{f}$ (GHz)] ≤3.0 for 1-g SAR and ≤7.5 for 10-g extremity SAR
   (1) f(GHz) is the RF channel transmit frequency in GHz
   (2) Power and distance are round to the nearest mW and mm before calculation
   (3) The result is rounded to one decimal place for comparison
   (4) If the test separation distance(antenna-user) is < 5mm, 5mm is used for excluded SAR calculation
   (5)

BT3.0 Max Power (dBm)	mW	Test Distance (mm)	Frequency(GHz)	Exclusion Thresholds
8.6	7.244	5	2.45	2.268

Per KDB 447498 D01v06 exclusion thresholds is2.268<3, RF exposure evaluation is not required.

BT estimated SAR value=Exclusion Thresholds/7.5=2.268/7.5=**0.302**W/Kg

BT3.0 Max Power (dBm)	mW	Test Distance (mm)	Frequency(GHz)	Exclusion Thresholds
8.6	7.244	10	2.45	1.134

Per KDB 447498 D01v06 exclusion thresholds is1.134<3, RF exposure evaluation is not required.

BT estimated SAR value=Exclusion Thresholds/7.5=1.134/7.5=**0.151**W/Kg

BT4.0 Max Power (dBm)	mW	Test Distance (mm)	Frequency(GHz)	Exclusion Thresholds
6.1	4.074	5	2.45	1.275

Per KDB 447498 D01v06 exclusion thresholds is 1.275<3, RF exposure evaluation is not required.

BT estimated SAR value=Exclusion Thresholds/7.5=1.275/7.5=**0.170**W/Kg

BT4.0 Max Power (dBm)	mW	Test Distance (mm)	Frequency(GHz)	Exclusion Thresholds
6.1	4.074	10	2.45	0.638

Per KDB 447498 D01v06 exclusion thresholds is0.638<3, RF exposure evaluation is not required.

BT estimated SAR value=Exclusion Thresholds/7.5=0.638/7.5=**0.085**W/Kg

The estimated SAR value is used for simultaneous transmission analysis.

Antenna Location:

The Body SAR measurement positions of each band are as below:

Antenna	Front	Back	Edge A	Edge B	Edge C	Edge D
WWAN Antenna Body-worn	Yes	Yes	No	No	No	No
WWAN Antenna hotspot	Yes	Yes	Yes	No	No	Yes
WIFI Antenna Body-worn	Yes	Yes	No	No	No	No
WIFI 2.4G Antenna hotspot	Yes	Yes	Yes	Yes	No	No

Note: According to KDB 941225 D06 v02r01, when antenna-to-edge>2.5cm, SAR is not required.

9. Scaling Factor calculation

Operation Mode	Channel /Frequency	Output Power(dBm)	Tune up Power in tolerance (dBm)	Max. Tune up(dBm)	Scaling Factor
GSM850	128/824.2	32.30	31.5 ±1.0	32.50	1.047
	190/836.6	32.50	31.5 ±1.0	32.50	1.000
	251/848.8	32.40	31.5 ±1.0	32.50	1.023
GPRS850 (GPRS 4Tx)	128/824.2	27.43	27.0 ±1.0	28.00	1.140
	190/836.6	27.61	27.0 ±1.0	28.00	1.094
	251/848.8	27.52	27.0 ±1.0	28.00	1.117
GSM1900	512/1850.2	28.53	27.8 ±1.0	28.80	1.064
	661/1880.0	28.74	27.8 ±1.0	28.80	1.014
	810/1909.8	28.43	27.8 ±1.0	28.80	1.089
GPRS1900 (GPRS 4Tx)	512/1850.2	23.33	23.0 ±1.0	24.00	1.167
	661/1880.0	23.55	23.0 ±1.0	24.00	1.109
	810/1909.8	23.40	23.0 ±1.0	24.00	1.148
WCDMA850	4132/826.4	22.66	21.7±1.0	22.70	1.009
	4183/836.6	22.46	21.7±1.0	22.70	1.057
	4233/846.6	22.51	21.7±1.0	22.70	1.045
WCDMA1900	9262/1852.4	22.70	21.7±1.0	22.70	1.000
	9400/1880.0	22.54	21.7±1.0	22.70	1.038
	9538/1907.6	22.61	21.7±1.0	22.70	1.021
WIFI 2.4G 802.11b	1/2412	17.12	17.3 ±1.0	18.30	1.312
	6/2437	18.23	17.3 ±1.0	18.30	1.016
	11/2462	17.64	17.3 ±1.0	18.30	1.164

10. Test Results

Results overview of GSM850

Test Position of Head	Channel /Frequency	Mode	SAR Value (W/kg)1-g	Power drift(%)	Scaled Factor	Scaled SAR (W/Kg)1-g	SAR Plot.
Right Tilt 15 °	128/824.2	Voice	0.916	-2.71	1.047	0.959	/
Right Tilt 15 °	190/836.6	Voice	**0.971**	0.17	1.000	**0.971**	Yes
Right Tilt 15 °	251/848.8	Voice	0.934	-4.57	1.023	0.956	/
Right Tilt 15 ° (Repeated)	128/824.2	Voice	0.842	-1.54	1.047	0.882	/
	190/836.6	Voice	0.893	-2.33	1.000	0.893	/
	251/848.8	Voice	0.855	-3.72	1.023	0.875	/
Right Cheek	128/824.2	Voice	0.881	1.62	1.047	0.922	/
Right Cheek	190/836.6	Voice	0.936	4.33	1.000	0.936	/
Right Cheek	251/848.8	Voice	0.902	0.97	1.023	0.923	/
Right Cheek (Repeated)	128/824.2	Voice	0.789	-1.66	1.047	0.826	/
	190/836.6	Voice	0.834	-2.91	1.000	0.834	/
	251/848.8	Voice	0.801	1.35	1.023	0.819	/
Left Cheek	190/836.6	Voice	0.604	0.19	1.000	0.604	/
Left Tilt 15 °	190/836.6	Voice	0.514	-4.06	1.000	0.514	/
Body-worn(10mm)	Channel /Frequency	Mode	SAR Value (W/kg)1-g	Power drift(%)	Scaled Factor	Scaled SAR (W/Kg)1-g	SAR Plot.
Back Upward	190/836.6	GPRS 4Tx	**0.273**	-4.15	1.094	**0.299**	Yes
Face Upward	190/836.6	GPRS 4Tx	0.163	-2.42	1.094	0.178	/
Hotspot(10mm)	Channel /Frequency	Mode	SAR Value (W/kg)1-g	Power drift(%)	Scaled Factor	Scaled SAR (W/Kg)1-g	SAR Plot.
Back Upward	190/836.6	GPRS 4Tx	**0.273**	-4.15	1.094	**0.299**	Yes
Face Upward	190/836.6	GPRS 4Tx	0.163	-2.42	1.094	0.178	/
Edge A	190/836.6	GPRS 4Tx	0.243	-0.84	1.094	0.266	/
Edge D	190/836.6	GPRS 4Tx	0.125	-0.59	1.094	0.137	/

Results overview of GSM1900

Test Position of Head	Channel /Frequency	Mode	SAR Value (W/kg)1-g	Power drift(%)	Scaled Factor	Scaled SAR (W/Kg)1-g	SAR Plot.
Left Cheek	661/1880.0	Voice	0.532	-2.25	1.014	0.539	/
Left Tilt 15 °	661/1880.0	Voice	0.424	-2.20	1.014	0.430	/
Right Cheek	661/1880.0	Voice	0.733	3.74	1.014	0.743	/
Right Tilt 15 °	661/1880.0	Voice	**0.735**	-0.54	1.014	**0.745**	Yes
Body-worn(10mm)	Channel /Frequency	Mode	SAR Value (W/kg)1-g	Power drift(%)	Scaled Factor	Scaled SAR (W/Kg)1-g	SAR Plot.
Back Upward	661/1880.0	GPRS 4Tx	**0.624**	-1.01	1.109	**0.692**	Yes
Face Upward	661/1880.0	GPRS 4Tx	0.281	0.37	1.109	0.312	/
Hotspot(10mm)	Channel /Frequency	Mode	SAR Value (W/kg)1-g	Power drift(%)	Scaled Factor	Scaled SAR (W/Kg)1-g	SAR Plot.
Back Upward	661/1880.0	GPRS 4Tx	**0.624**	-1.01	1.109	**0.692**	Yes
Face Upward	661/1880.0	GPRS 4Tx	0.281	0.37	1.109	0.312	/
Edge A	661/1880.0	GPRS 4Tx	0.174	1.70	1.109	0.193	/
Edge D	661/1880.0	GPRS 4Tx	0.409	-3.35	1.109	0.454	/

Results overview of WCDMA850

Test Position of Head	Channel /Frequency	Mode	SAR Value (W/kg)1-g	Power drift(%)	Scaled Factor	Scaled SAR (W/Kg)1-g	SAR Plot.
Right Cheek	4132/826.4	RMC	0.893	-2.16	1.009	0.901	/
Right Cheek	4183/836.6	RMC	**0.902**	-1.19	1.057	**0.953**	Yes
Right Cheek	4233/846.6	RMC	0.887	-2.29	1.045	0.927	/
Right Cheek (Repeated)	4132/826.4	RMC	0.821	-1.55	1.009	0.828	/
	4183/836.6	RMC	0.843	2.64	1.057	0.891	/
	4233/846.6	RMC	0.808	-4.88	1.045	0.844	/
Right Tilt 15 °	4132/826.4	RMC	0.852	-3.35	1.009	0.860	/
Right Tilt 15 °	4183/836.6	RMC	0.861	-1.11	1.057	0.910	/
Right Tilt 15 °	4233/846.6	RMC	0.832	-1.69	1.045	0.869	/
Right Tilt 15 ° (Repeated)	4132/826.4	RMC	0.793	-2.51	1.009	0.800	/
	4183/836.6	RMC	0.805	0.23	1.057	0.851	/
	4233/846.6	RMC	0.785	-1.94	1.045	0.820	/
Left Cheek	4183/836.6	RMC	0.488	-2.48	1.057	0.516	/
Left Tilt 15 °	4183/836.6	RMC	0.518	-3.45	1.057	0.547	/
Body-worn(10mm)	Channel /Frequency	Mode	SAR Value (W/kg)1-g	Power drift(%)	Scaled Factor	Scaled SAR (W/Kg)1-g	SAR Plot.
Back Upward	4183/836.6	RMC	**0.257**	-2.23	1.057	**0.272**	Yes
Face Upward	4183/836.6	RMC	0.170	-3.33	1.057	0.180	/
Hotspot(10mm)	Channel /Frequency	Mode	SAR Value (W/kg)1-g	Power drift(%)	Scaled Factor	Scaled SAR (W/Kg)1-g	SAR Plot.
Back Upward	4183/836.6	RMC	**0.257**	-2.23	1.057	**0.272**	Yes
Face Upward	4183/836.6	RMC	0.170	-3.33	1.057	0.180	/
Edge A	4183/836.6	RMC	0.208	1.98	1.057	0.220	/
Edge D	4183/836.6	RMC	0.132	1.22	1.057	0.139	/

Results overview of WCDMA1900

Test Position of Head	Channel /Frequency	Mode	SAR Value (W/kg)1-g	Power drift(%)	Scaled Factor	Scaled SAR (W/Kg)1-g	SAR Plot.
Left Cheek	9400/1880.0	RMC	0.272	3.70	1.038	0.282	/
Left Tilt 15 °	9400/1880.0	RMC	0.239	3.23	1.038	0.248	/
Right Cheek	9400/1880.0	RMC	**0.526**	-0.45	1.038	**0.546**	Yes
Right Tilt 15 °	9400/1880.0	RMC	0.482	0.83	1.038	0.500	/
Body-worn(10mm)	Channel /Frequency	Mode	SAR Value (W/kg)1-g	Power drift(%)	Scaled Factor	Scaled SAR (W/Kg)1-g	SAR Plot.
Back Upward	9262/1852.4	RMC	0.866	-2.42	1.000	0.866	/
Back Upward	9400/1880.0	RMC	**0.871**	-1.14	1.038	**0.904**	Yes
Back Upward	9538/1907.6	RMC	0.850	-2.94	1.021	0.868	/
Back Upward (Repeated)	9262/1852.4	RMC	0.810	-3.26	1.000	0.810	/
	9400/1880.0	RMC	0.824	1.15	1.038	0.855	/
	9538/1907.6	RMC	0.803	-0.88	1.021	0.820	/
Face Upward	9400/1880.0	RMC	0.109	4.22	1.038	0.113	/
Hotspot(10mm)	Channel /Frequency	Mode	SAR Value (W/kg)1-g	Power drift(%)	Scaled Factor	Scaled SAR (W/Kg)1-g	SAR Plot.
Back Upward	9262/1852.4	RMC	0.866	-2.42	1.000	0.866	/
Back Upward	9400/1880.0	RMC	**0.871**	-1.14	1.038	**0.904**	Yes
Back Upward	9538/1907.6	RMC	0.850	-2.94	1.021	0.868	/
Back Upward (Repeated)	9262/1852.4	RMC	0.810	-3.26	1.000	0.810	/
	9400/1880.0	RMC	0.824	1.15	1.038	0.855	/
	9538/1907.6	RMC	0.803	-0.88	1.021	0.820	/
Face Upward	9400/1880.0	RMC	0.109	4.22	1.038	0.113	/
Edge A	9400/1880.0	RMC	0.215	4.83	1.038	0.223	/
Edge D	9400/1880.0	RMC	0.507	3.71	1.038	0.526	/

Results overview of WIFI2.4G 802.11b

Test Position of Head	Channel /Frequency	Mode	SAR Value (W/kg)1-g	Power drift(%)	Scaled Factor	Scaled SAR (W/Kg)1-g	SAR Plot.
Left Cheek	6/2437	DSSS	**0.316**	-1.32	1.016	**0.321**	Yes
Left Tilt 15 °	6/2437	DSSS	0.307	-1.09	1.016	0.312	/
Right Cheek	6/2437	DSSS	0.313	-3.39	1.016	0.318	/
Right Tilt 15 °	6/2437	DSSS	0.287	-2.57	1.016	0.292	/
Body-worn(10mm)	Channel /Frequency	Mode	SAR Value (W/kg)1-g	Power drift(%)	Scaled Factor	Scaled SAR (W/Kg)1-g	SAR Plot.
Back Upward	6/2437	DSSS	**0.274**	0.80	1.016	**0.278**	Yes
Face Upward	6/2437	DSSS	0.234	-0.72	1.016	0.238	/
Hotspot(10mm)	Channel /Frequency	Mode	SAR Value (W/kg)1-g	Power drift(%)	Scaled Factor	Scaled SAR (W/Kg)1-g	SAR Plot.
Back Upward	6/2437	DSSS	**0.274**	0.80	1.016	**0.278**	Yes
Face Upward	6/2437	DSSS	0.234	-0.72	1.016	0.238	/
Edge A	6/2437	DSSS	0.102	0.99	1.016	0.104	/
Edge B	6/2437	DSSS	0.196	1.85	1.016	0.199	/

Note:

Per KDB941225 D06 v02r01, When the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested. As the manufacture requirement the separation distance use 5mm for Hotspot mode.

Per KDB Publication 941225 D01v03r01. RMC 12.2kbps was as primary mode SAR, when the primary mode SAR less than 1.2W/kg, secondary SAR (HSPA) was not requires.

When the 1-g SAR for the mid-band channel or the channel with the highest output power satisfy the following conditions, testing of the other channels in the band is not required. (Per KDB 447498 D01 General RF Exposure Guidance v06)

- ≤ 0.8 W/kg, when the transmission band is ≤ 100 MHz
- ≤ 0.6 W/kg, when the transmission band is between 100 MHz and 200 MHz
- ≤ 0.4 W/kg, when the transmission band is ≥ 200 MHz

The priority (Main) and secondary(upper) antenna cannot tramsimit at the same time.

11. Simultaneous Transmissions Analysis

Localized Specific Absorption Rate (SAR) of this portable wireless device has been measured in all cases requested by the relevant standards cited in Clause 6 of this report. Maximum localized SAR is **below** exposure limits specified in the relevant standards.

Simultaneous SAR

No.	Transmitter Combinations	Scenario Supported or not	Supported for Mobile Hotspot or not
1	GSM + BT	Yes	No
2	GSM + WIFI 2.4G	Yes	Yes
3	WCDMA +BT	Yes	No
4	WCDMA +WIFI 2.4G	Yes	Yes
5	WIFI+BT	No	No

Simultaneous Tx Combination of GSM/WCDMA and BT/WIFI (Head)

Test Position/Freq.		Right Cheek	Right Tilt 15 °	Left Cheek	Left Tilt 15 °
Head MAX 1-g SAR(W/Kg)	GSM850	0.936	0.971	0.604	0.514
	GSM1900	0.743	0.745	0.539	0.430
	WCDMA 850	0.953	0.910	0.516	0.547
	WCDMA 1900	0.546	0.500	0.282	0.248
	WIFI 2.4G	0.318	0.292	0.321	0.312
	BT	*0.302	*0.302	*0.302	*0.302
WIFI Simultaneous ∑1-g SAR(W/Kg)		1.271	1.263	0.925	0.859
BT Simultaneous ∑1-g SAR(W/Kg)		1.255	1.273	0.906	0.849

Simultaneous Tx Combination of GSM/WCDMA and BT/WIFI (Body).

Test Position/Freq.		BACK	FACE	Edge A	Edge B	Edge C	Edge D
Body MAX 1-g SAR(W/Kg) 10mm distance	GSM850	0.299	0.178	/	/	/	/
	GSM1900	0.692	0.312	/	/	/	/
	WCDMA 850	0.272	0.180	/	/	/	/
	WCDMA 1900	0.904	0.113	/	/	/	/
	WIFI 2.4G	0.278	0.238	/	/	/	/
	BT	*0.151	*0.151	/	/	/	/
WIFI Simultaneous ∑1-g SAR(W/Kg)		1.182	0.550	/	/	/	/
BT Simultaneous ∑1-g SAR(W/Kg)		1.055	0.463	/	/	/	/

Simultaneous Tx Combination of GSM/WCDMA and WIFI (Body).

Test Position/Freq.		BACK	FACE	Edge A	Edge B	Edge C	Edge D
Hotspot MAX 1-g SAR(W/Kg) 10mm distance	GSM850	0.299	0.178	0.266	0.096	/	0.137
	GSM1900	0.692	0.312	0.193	0.135	/	0.454
	WCDMA 850	0.272	0.180	0.220	0.094	/	0.139
	WCDMA 1900	0.904	0.113	0.223	0.158	/	0.526
	WIFI 2.4G	0.278	0.238	0.104	0.199	/	0.012
WIFI2.4G Simultaneous ∑1-g AR(W/Kg)		1.182	0.550	0.370	0.357	/	0.538

The estimated SAR value with * Signal

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required

12. Measurement Uncertainty

No.	Uncertainty Component	Type	Uncertainty Value (%)	Probability Distribution	k	ci	Standard Uncertainty (%) ui(%)	Degree of freedom Veff or vi
	Measurement System							
1	– Probe Calibration	B	5.8	N	1	1	5.8	∞
2	– Axial isotropy	B	3.5	R	$\sqrt{3}$	0.5	1.43	∞
3	—Hemispherical Isotropy	B	5.9	R	$\sqrt{3}$	0.5	2.41	∞
4	– Boundary Effect	B	1	R	$\sqrt{3}$	1	0.58	∞
5	– Linearity	B	4.7	R	$\sqrt{3}$	1	2.71	∞
6	– System Detection Limits	B	1.0	R	$\sqrt{3}$	1	0.58	∞
7	Modulation response	B	3	N	1	1	3.00	
8	– Readout Electronics	B	0.5	N	1	1	0.50	∞
9	– Response Time	B	1.4	R	$\sqrt{3}$	1	0.81	∞
10	– Integration Time	B	3.0	R	$\sqrt{3}$	1	1.73	∞
11	– RF Ambient Conditions	B	3.0	R	$\sqrt{3}$	1	1.73	∞
12	– Probe Position Mechanical tolerance	B	1.4	R	$\sqrt{3}$	1	0.81	∞
13	– Probe Position with respect to Phantom Shell	B	1.4	R	$\sqrt{3}$	1	0.81	∞
14	– Extrapolation, Interpolation and Integration Algorithms for Max. SAR evaluation	B	2.3	R	$\sqrt{3}$	1	1.33	∞
	Uncertainties of the DUT							

15	– Position of the DUT	A	2.6	N	$\sqrt{3}$	1	2.6	5
16	– Holder of the DUT	A	3	N	$\sqrt{3}$	1	3.0	5
17	– Output Power Variation –SAR drift measurement	B	5.0	R	$\sqrt{3}$	1	2.89	∞
Phantom and Tissue Parameters								
18	– Phantom Uncertainty(shape and thickness tolerances)	B	4	R	$\sqrt{3}$	1	2.31	∞
19	Uncertainty in SAR correction for deviation(in permittivity and conductivity)	B	2	N	1	1	2.00	
20	– Liquid Conductivity Target –tolerance	B	2.5	R	$\sqrt{3}$	0.6	1.95	∞
21	– Liquid Conductivity –measurement Uncertainty)	B	4	N	$\sqrt{3}$	1	0.92	9
22	– Liquid Permittivity Target tolerance	B	2.5	R	$\sqrt{3}$	0.6	1.95	∞
23	– Liquid Permittivity –measurement uncertainty	B	5	N	$\sqrt{3}$	1	1.15	∞
Combined Standard Uncertainty				RSS			10.63	
Expanded uncertainty (Confidence interval of 95 %)				K=2			21.26	

System Check Uncertainty

No.	Uncertainty Component	Type	Uncertainty Value (%)	Probability Distribution	k	ci	Standard Uncertainty (%) ui(%)	Degree of freedom Veff or vi
	Measurement System							
1	– Probe Calibration	B	5.8	N	1	1	5.8	∞
2	– Axial isotropy	B	3.5	R	$\sqrt{3}$	0.5	1.43	∞

3	—Hemispherical Isotropy	B	5.9	R	$\sqrt{3}$	0.5	2.41	∞
4	– Boundary Effect	B	1	R	$\sqrt{3}$	1	0.58	∞
5	– Linearity	B	4.7	R	$\sqrt{3}$	1	2.71	∞
6	– System Detection Limits	B	1	R	$\sqrt{3}$	1	0.58	∞
7	Modulation response	B	0	N	1	1	0.00	
8	– Readout Electronics	B	0.5	N	1	1	0.50	∞
9	– Response Time	B	0.00	R	$\sqrt{3}$	1	0.00	∞
10	– Integration Time	B	1.4	R	$\sqrt{3}$	1	0.81	∞
11	– RF Ambient Conditions	B	3.0	R	$\sqrt{3}$	1	1.73	∞
12	– Probe Position Mechanical tolerance	B	1.4	R	$\sqrt{3}$	1	0.81	∞
13	– Probe Position with respect to Phantom Shell	B	1.4	R	$\sqrt{3}$	1	0.81	∞
14	– Extrapolation, Interpolation and Integration Algorithms for Max. SAR evaluation	B	2.3	R	$\sqrt{3}$	1	1.33	∞
	Uncertainties of the DUT							
15	Deviation of experimental source from numberical source	A	4	N	1	1	4.00	5
16	Input Power and SAR drift measurement	A	5	R	$\sqrt{3}$	1	2.89	5
17	Dipole Axis to Liquid Distance	B	2	R	$\sqrt{3}$	1	1.2	∞
Phantom and Tissue Parameters								
18	– Phantom Uncertainty(shape	B	4	R	$\sqrt{3}$	1	2.31	∞

	and thickness tolerances)							
19	Uncertainty in SAR correction for deviation(in permittivity and conductivity)	B	2	N	1	1	2.00	
20	– Liquid Conductivity Target –tolerance	B	2.5	R	$\sqrt{3}$	0.6	1.95	∞
21	– Liquid Conductivity –measurement Uncertainty)	B	4	N	$\sqrt{3}$	1	0.92	9
22	– Liquid Permittivity Target tolerance	B	2.5	R	$\sqrt{3}$	0.6	1.95	∞
23	– Liquid Permittivity –measurement uncertainty	B	5	N	$\sqrt{3}$	1	1.15	∞
Combined Standard Uncertainty				RSS			10.15	
Expanded uncertainty (Confidence interval of 95 %)				K=2			20.29	

13. Equipment List

This table is a complete overview of the SAR measurement equipment. Devices used during the test described are marked ☒.

	EQUIPMENT	Model	Serial number	Calibration Date	Due Date
☒	SAR Probe	SSE2	SN41/18 EPGO334	2019/12/10	2020/12/10
☐	Dipole	SID750	SN 23/15 DIP0G750-378	2017/11/27	2020/11/26
☒	Dipole	SID835	SN 09/13 DIP0G835-217	2017/11/27	2020/11/26
☐	Dipole	SID900	SN 09/13 DIP0G900-215	2017/11/27	2020/11/26
☐	Dipole	SID1800	SN 09/13 DIP1G800-216	2017/11/27	2020/11/26
☒	Dipole	SID1900	SN 09/13 DIP2G000-218	2017/11/27	2020/11/26
☐	Dipole	SID2000	SN 09/13 DIP2G000-219	2017/11/27	2020/11/26
☒	Dipole	SID2450	SN_09/13_DIP2G450-220	2017/11/27	2020/11/26
☐	Dipole	SID2600	SN 32/14_DIP2G600-338	2017/11/27	2020/11/26
☐	Dipole	SWG5500	SN15/15 WGA39	2017/11/27	2020/11/26
☒	KEYSIGHT	E7515A	MY56040357	2020/04/03	2021/04/03
☒	Vector Network Analyzer(R&S)	ZVB8	A0802530	2020/04/03	2021/04/03
☒	PC 3.5 Fixed Match Calibration Kit	ZV-Z32	100571	2019/11/29	2020/11/28
☒	Dielectric Probe Kit	SCLMP	SN 09/13 OCPG51	2019/11/27	2020/11/26
☒	Signal Generator	SMU200A	A140801888	2020/03/16	2021/03/15
☒	Amplifier	Nucletudes	143060	2020/03/16	2021/03/15
☒	Directional Coupler	DC6180A	305827	2020/03/16	2021/03/15
☒	Power Meter	NRP2	A140401673	2020/03/16	2021/03/15
☒	Power Sensor	NPR-Z11	1138.3004.02-114072-nq	2020/03/16	2021/03/15
☒	Power Meter	NRVS	A0802531	2020/03/16	2021/03/15
☒	Power Sensor	NRV-Z4	100069	2020/03/16	2021/03/15
☒	KEYSIGHT	E7515A	MY56040357	2020/04/03	2021/04/03
☒	Vector Network Analyzer(R&S)	ZVB8	A0802530	2020/04/03	2021/04/03
☒	PC 3.5 Fixed Match Calibration Kit	ZV-Z32	100571	2019/11/29	2020/11/28

ANNEX A: Appendix A: SAR System performance Check Plots

(Please See Appendix A)

ANNEX B: Appendix B: SAR Measurement results Plots

(Please See Appendix B)

ANNEX C: Appendix C: Calibration reports

(Please See Appendix C)

ANNEX D: Appendix D: SAR Test Setup

(Please See Appendix D)

—End of the Report—