

# FCC SAR TEST REPORT

**Report No.:** SET2020-14131

**Product:** Handheld Data Terminal

**Trade Name:** UROVO

**Model No.:** RFDT50

**FCC ID**: SWSRFDT50

**Applicant:** UROVO TECHNOLOGY CO., LTD.

Address: 36F,High-Tech Zone Union Tower,No.63,Xuefu Road, Nanshan

District, Shenzhen, Guangdong, 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.** ..... Handheld Data Terminal

Model No.RFDT50Brand Name.UROVO

**FCC ID.....** SWSRFDT50

**Applicant.....** UROVO TECHNOLOGY CO., LTD.

Applicant Address.....: 36F,High-Tech Zone Union Tower,No.63,Xuefu Road, Nanshan

District, Shenzhen, Guangdong, China

Manufacturer.....: UROVO TECHNOLOGY CO., LTD.

Manufacturer Address: 36F,High-Tech Zone Union Tower,No.63,Xuefu Road, Nanshan

District, Shenzhen, Guangdong, 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.....** 2020.11.17-2020.11.17

Xinyneum Fang

2020-11-19

Tested by ...... Xinyuan Fang, Test Engineer

Chris You, Senior Engineer

Shuangwen Zhang, Manager



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## 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: CCIC Southern Testing 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. Designation Number: CN5031, valid time is

until December 31, 2020.

ISED Registration: CCIC Southern Testing Co., Ltd. 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** Temperature (°C): 21°C

**Condition:** 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: Handheld Data Terminal

Model Name: RFDT50

Support Band RFID(900MHz)

Test Band RFID

Development

Stage

**Identical Prototype** 

General

description:

Accessories Power Supply

Antenna type Internal Antenna

Operation mode RFID

Modulation mode DSB-ASK

DTM mode Not support

Hardware Version

Software Version

Model No.: NBLRFDT50

Capacitance:3000mAh

Battery options: Rated Voltage: 3.7V

Charge Limit:4.2V Manufacturer:

Shenzhen Cholipower Technology Co.,LTD

Body-Support: 0.486 W/Kg(Limit:1.6W/Kg, 10mm

Max. SAR Value 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.



## 3. SAR Summary

#### **Highest Standalone SAR Summary**

Exposure	Frequency	Scaled	Highest Scaled 1g-SAR(W/kg)
Position	Band	1g-SAR(W/kg)	
Body-Support (10mm Gap)	RFID	0.486	0.486

## 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:

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

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

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

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

where C is the specific head capacity,  $\delta T$  is the temperature rise and  $\delta t$  the exposure duration, or related to the electrical field in the tissue by

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

where  $\sigma$  is the conductivity of the tissue,  $\rho$  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 D05A	v01r02 LTE Rel.10 KDB Inquiry Sheet
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.

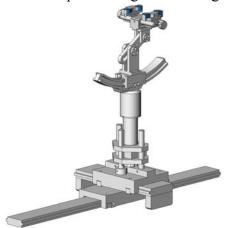


SAM Twin Phantom

#### **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:  $\pm 0.5$  dB (700 MHz to 3 GHz)

Directivity  $\pm 0.25$  dB in HSL (rotation around probe axis)

 $\pm$  0.5 dB in tissue material (rotation normal to probe

axis)

Dynamic Range  $1.5 \mu \text{W/g}$  to 100 mW/g;

Linearity:  $\pm 0.5 \text{ dB}$ 

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

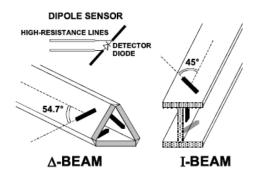
Dosimetry in strong gradient fields Compliance tests of mobile phones

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		Frequency (MHz)										
(% by weight )	45	50	83	35	91.	5	19	900	24	50	26	000
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	Muscle(body)Tissue Simulation Liquid MSL750						
H2O	Water, 35 – 58%							
Sucrese	Sugar, white, refined	l, 40-60%						
NaCl	Sodium Chloride, 0-	6%						
Hydroxyethel-cellulsoe	Medium Viscosity (C	Medium Viscosity (CAS# 9004-62-0), <0.3%						
Preventol-D7	Preservative: aqueou	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 $\epsilon r$ Head $\sigma(S/m)$ Body $\epsilon r$ Body $\sigma(S/m)$							
750	41.9	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

E(MII-)	Head	Tissue	Body	Tissue
Frequency (MHz)	$\mathcal{E}_{ m r}$	σ(S/m)	$\mathcal{E}_{\mathrm{r}}$	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 Body Tissue Simulating Liquid

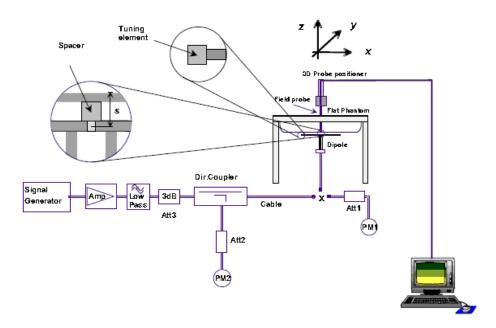
Temperature: 23.2°C; Humidity: 64%;							
/ Frequency Permittivity ε Conductivity σ (S/m)							
Target value 900MHz 55.0±5% 1.05±5%							
Validation value (2020-11-17)	900MHz	54.96	1.02				



#### **SAR System validation**

Prior to the assessment, the system validation kit was used to test whether the system was operating within its specifications of  $\pm 10\%$ . 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°C 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: Body SAR system validation (1g)

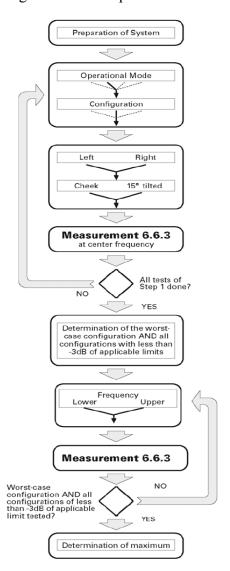
T.	D 1	Target value	Test valu	ie (W/kg)
Frequency	Duty cycle	(W/kg)	10 mW	1W
900MHz(2020-11-17)	1:1	11.43±10%	0.1127	11.27

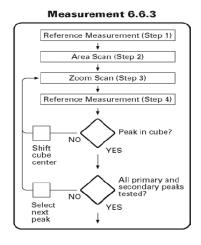
<sup>\*</sup> Note: Target value was referring to the measured value in the calibration certificate of reference dipole. Note: All SAR values are normalized to 1W forward power.



## 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 RFID Output Power

Operation Mode	Frequency (MHz)	Output Power (dBm)
	902.75MHz	28.62
RFID	915.25MHz	27.57
	927.25MHz	26.33

# 8. Scaling Factor calculation

Operation Mode	Channel /Frequency	Output Power(dBm)	Tune up Power in tolerance (dBm)	Max. Tune up(dBm)	Scaling Factor
	902.75MHz	28.62	$27.5 \pm 1.2$	28.70	1.019
RFID	915.25MHz	27.57	$27.5 \pm 1.2$	28.70	1.297
	927.25MHz	26.33	$27.5 \pm 1.2$	28.70	1.726



## 9. Test Results

#### **Results overview of RFID**

Body-Support Mode(10mm)	Channel /Frequency	Mode	SAR Value (W/kg)1-g	Power drift(%)	Scaled Factor	Scaled SAR (W/Kg)1-g	SAR Plot.
Face Upward	1/902.75	RFID	0.477	-4.64	1.019	0.486	Yes
Left Side	1/902.75	RFID	0.110	4.89	1.019	0.112	/
Right Side	1/902.75	RFID	0.135	1.23	1.019	0.138	/

#### 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)

- $\leq 0.8$  W/kg, when the transmission band is  $\leq 100$  MHz
- $\leq 0.6$  W/kg, when the transmission band is between 100 MHz and 200 MHz
- $\leq$  0.4 W/kg, when the transmission band is  $\geq$  200 MHz



# **10.** Measurement Uncertainty

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



						1,01	JUILING, SE 12	.020 14101
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	В	5.0	R	$\sqrt{3}$	1	2.89	$\infty$
			Phantom and T	issue Parameter	rs			
18	- Phantom Uncertainty(shape and thickness tolerances)	В	4	R	$\sqrt{3}$	1	2.31	$\infty$
19	Uncertainty in SAR correction for deviation(in permittivity and conductivity)	В	2	N	1	1	2.00	
20	- Liquid Conductivity Target -tolerance	В	2.5	R	$\sqrt{3}$	0.6	1.95	$\infty$
21	- Liquid Conductivity -measurement Uncertainty)	В	4	N	$\sqrt{3}$	1	0.92	9
22	- Liquid Permittivity Target tolerance	В	2.5	R	$\sqrt{3}$	0.6	1.95	$\infty$
23	- Liquid Permittivity -measurement uncertainty	В	5	N	$\sqrt{3}$	1	1.15	$\infty$
Co	ombined Standard Uncertainty			RSS			10.63	
	Expanded uncertainty (Confidence interval of 95 %)			K=2			21.26	

# System Check Uncertainty

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



_							1,101	JUILING, JL 12		
	3	—Hemispherical Isotropy	В	5.9	R	$\sqrt{3}$	0.5	2.41	$\infty$	
	4	- Boundary Effect	В	1	R	$\sqrt{3}$	1	0.58	∞	
	5	- Linearity	В	4.7	R	$\sqrt{3}$	1	2.71	∞	
	6	- System Detection Limits	В	1	R	$\sqrt{3}$	1	0.58	∞	
	7	Modulation response	В	0	N	1	1	0.00		
	8	- Readout Electronics	В	0.5	N	1	1	0.50	∞	
	9	- Response Time	В	0.00	R	$\sqrt{3}$	1	0.00	∞	
1	10	- Integration Time	В	1.4	R	$\sqrt{3}$	1	0.81	$\infty$	
1	11	- RF Ambient Conditions	В	3.0	R	$\sqrt{3}$	1	1.73	$\infty$	
1	12	- Probe Position Mechanical tolerance	В	1.4	R	$\sqrt{3}$	1	0.81	$\infty$	
1	13	- Probe Position with respect to Phantom Shell	В	1.4	R	$\sqrt{3}$	1	0.81	∞	
1	14	- Extrapolation, Interpolation and Integration Algorithms for Max. SAR evaluation	В	2.3	R	$\sqrt{3}$	1	1.33	× ×	
				Uncertain	nties of the DUT					
	15	Deviation of experimental source from numberical source	A	4	N	1	1	4.00	5	
1	16	Input Power and SAR drift measurement	A	5	R	$\sqrt{3}$	1	2.89	5	
	17	Dipole Axis to Liquid Distance	В	2	R	$\sqrt{3}$	1	1.2	$\infty$	
	Phantom and Tissue Parameters									
1	18	- Phantom Uncertainty(shape	В	4	R	$\sqrt{3}$	1	2.31	∞	



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



# 11.Equipment List

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

deser	ibed are marked .				
	EQUIPMENT	Model	Serial number	Calibration Date	Due Date
$\boxtimes$	SAR Probe	SSE2	SN27/15 EPGO261	2020/06/25	2021/06/24
$\boxtimes$	Dipole	SID750	SN 23/15 DIP0G750-378	2020/06/25	2021/06/24
$\boxtimes$	Dipole	SID835	SN 09/13 DIP0G835-217	2020/06/25	2021/06/24
$\boxtimes$	Dipole	SID900	SN 09/13 DIP0G900-215	2020/06/25	2021/06/24
	Dipole	SID1800	SN 09/13 DIP1G800-216	2020/06/25	2021/06/24
$\boxtimes$	Dipole	SID2000	SN 09/13 DIP2G000-219	2020/06/25	2021/06/24
$\boxtimes$	Dipole	SID2450	SN_09/13_DIP2G450-220	2020/06/25	2021/06/24
$\boxtimes$	Dipole	SID2600	SN 32/14_DIP2G600-338	2020/06/25	2021/06/24
	Dipole	SWG5500	SN15/15 WGA39	2020/06/25	2021/06/24
$\boxtimes$	Multimeter	Keithley-2000	4014020	2020/04/03	2021/04/03
$\boxtimes$	System Simulator(R&S)	CMW500	130805	2020/07/26	2021/07/25
$\boxtimes$	KEYSIGHT	E7515A	MY56040357	2020/04/03	2021/04/03
$\boxtimes$	Vector Network Analyzer(R&S)	ZVB8	A0802530	2020/04/03	2021/04/03
$\boxtimes$	PC 3.5 Fixed Match Calibration Kit	ZV-Z32	100571	2019/11/29	2020/11/28
$\boxtimes$	Dielectric Probe Kit	SCLMP	SN 09/13 OCPG51	2019/11/27	2020/11/26
$\boxtimes$	Signal Generator	SMU200A	A140801888	2020/03/16	2021/03/15
$\boxtimes$	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
$\boxtimes$	Power Meter	NRVS	A0802531	2020/03/16	2021/03/15
$\boxtimes$	Power Sensor	NRV-Z4	100069	2020/03/16	2021/03/15



ANNEX A:	Appendix A:	SAR Sy	zstem ner	rformance	Check Plots
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(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-