FCC SAR Test Report

Report No.	:	**1812C40178712501**
Applicant	:	**Shenzhen SOYES Premium Technology limited**
Address	:	**Building 521, 305, Bagualing Industrial Zone, 255Baguagsan Road, Hualin Community, Yuanling, Futian Shenzhen.518000 China**
Product Name	:	**Mini smartphone**
Report Date	:	**Feb. 06, 2025**

Shenzhen Anbotek Compliance Laboratory Limited

Contents

Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline
400-003-0500
www.anbotek.com

TEST REPORT

Applicant	:	Shenzhen SOYES Premium Technology limited
Manufacturer	:	Shenzhen SOYES Premium Technology limited
Product Name	:	Mini smartphone
Model No.	:	XS18Pro, XS18ProMax, XS19, XS19Pro, XS20 , XS20Pro,XS21 ,XS21Pro, XS22, XS22Pro, XS23, XS23Pro, XS24, XS24Pro, XS25, XS25Pro, XS26, XS26Pro, XS28, XS28Pro, XS18MAX, XS14Pro, XS15, XS16,16Mini, XS16Pro, S24ProMax
Trade Mark	:	SOYES
Rating(s)	:	Input: 5V⎓500mA Battery Capacity: DC 3.8V, 900mAh
Test Standard(s)	**:**	**IEC/IEEE 62209-1528:2020; FCC 47 CFR Part 2.1093; ANSI/IEEE C95.1:2019; Reference FCC KDB 447498 D01 v06; KDB 248227 D01 v02;**

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the IEC/IEEE 62209-1528:2020, FCC 47 CFR Part 2.1093, IEEE Std C95.1-2019 requirements.

Date of Receipt	Dec. 20, 2024
Date of Test	Dec. 20, 2024 to Feb. 05, 2024
Prepared By	Qiangfei Yang (Qiangfei Yang)
Test Engineer	Joker Huang (Joker Huang)
Approved & Authorized Signer	Kingkong Jin (Kingkong Jin)

Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

Version

Version No.	Date	Description
R00	Jan. 20, 2025	Original
R01	Feb.06,2025	1. The conductivity coefficient has been unified. 2. The SAR test for the WIFI head has been added.

1. Statement of Compliance

<Highest SAR Summary>

This 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 IEEE Std C95.1-2019, and had been tested in accordance with the measurement methods and procedures specified in IEC/IEEE 62209-1528:2020. The maximum results of Specific Absorption Rate (SAR) found during testing are as follows.

<Highest SAR Summary>

Frequency Band	Highest 1g-SAR(W/Kg)	SAR Test Limit (W/Kg)
	Body(10mm)	
WIFI2.4G	0.167	1.6
GSM850	0.609	
PCS1900	1.079	
WCDMA Band2	1.119	
WCDMA Band5	0.670	
MAX Simultaneous	1.366	
Test Result	PASS	

Frequency Band	Highest 1g-SAR(W/Kg)	SAR Test Limit (W/Kg)
	Head(0mm)	
WIFI2.4G	0.016	1.6
GSM850	0.338	
PCS1900	0.879	
WCDMA Band2	0.351	
WCDMA Band5	0.572	
MAX Simultaneous	0.895	
Test Result	PASS	

This 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 IEEE Std C95.1-2019, and had been tested in accordance with the measurement methods and procedures specified in IEC/IEEE 62209-1528:2020.

2. General Information

2.1. Client Information

Applicant	:	Shenzhen SOYES Premium Technology limited
Address	:	Building 521, 305, Bagualing Industrial Zone, 255Baguagsan Road, Hualin Community, Yuanling, Futian Shenzhen.518000 China
Manufacturer	:	Shenzhen SOYES Premium Technology limited
Address	:	Building 521, 305, Bagualing Industrial Zone, 255Baguagsan Road, Hualin Community, Yuanling, Futian Shenzhen.518000 China
Factory	:	Shenzhen SOYES Premium Technology limited
Address	:	Building 521, 305, Bagualing Industrial Zone, 255Baguagsan Road, Hualin Community, Yuanling, Futian Shenzhen.518000 China

2.2. Description of Equipment Under Test (EUT)

Product Name	:	Mini smartphone
Model No.	:	XS18Pro, XS18ProMax, XS19 ,XS19Pro,XS20, XS20Pro, XS21, XS21Pro, XS22, XS22Pro, XS23, XS23Pro, XS24, XS24Pro, XS25, XS25Pro, XS26, XS26Pro, XS28, XS28Pro, XS18MAX, XS14Pro, XS15, XS16, XS16Pro, 16mini, S24ProMax (Note: All samples are the same except the model number and color, so we prepare "XS18Pro" for test only.)
Trade Mark	:	SOYES
Test Power Supply	:	Battery Capacity: DC 3.8V, 900mAh
Test Sample No.	:	(Engineering Sample)
Tx Frequency	:	2.4GWIFI:2412-2462MHz GSM: GSM850:824.2-893.8MHz PCS1900:1850.2-1989.8MHz WCDMA: Band2:1852.5-1987.6MHz Band5:1712.4-2152.5MHz
Type of Modulation	:	WIFI:BPSK, QPSK,16QAM, 64QAM GSM:GMSK WCDMA:QPSK
Category of device	:	Portable device
Remark: The above DUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.		

2.3. Device Category and SAR Limits

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user. Limit for General Population/Uncontrolled exposure should be applied for this device, it is 1.6 W/kg as averaged over any 1 gram of tissue.

2.4. Applied Standard

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2.1093
- IEEE Std C95.1-2019
- IEC/IEEE 62209-1528:2020
- KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- KDB 865664 D02 RF Exposure Reporting v01r02
- KDB 447498 D01 General RF Exposure Guidance v06
- KDB 248227 D01 802 11 Wi-Fi SAR v02r02

2.5. Environment of Test Site

Items	Required	Actual
Temperature (℃)	18-25	22~23
Humidity (%RH)	30-70	55~65

2.6. Test Configuration

For WIFI ,GSM and WCDMA SAR testing, engineering testing software installed on the EUT can provide continuous transmitting RF signal.

2.7. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.:434132

Shenzhen Anbotek Compliance Laboratory Limited, 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. Registration No. 434132.

ISED-Registration No.: 8058A

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

Test Location

Shenzhen Anbotek Compliance Laboratory Limited.

Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China.

Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

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 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.

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:

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

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

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

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

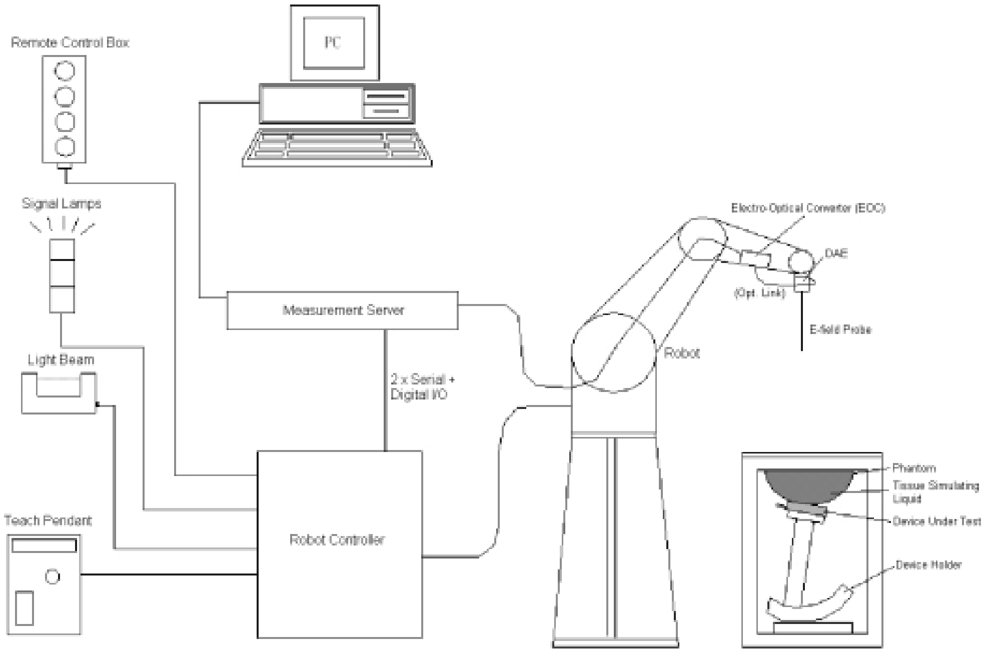
Where: C is the specific head capacity, δT is the temperature rise and δtisthe exposure duration, or related to the electrical field in the tissue by

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

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. SAR Measurement System



DASY System Configurations

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

- A standard high precision 6-axis robot with controller, a teach pendant and software
- A data acquisition electronic (DAE) attached to the robot arm extension
- A dosimetric probe equipped with an optical surface detector system
- The electro-optical converter (EOC) performs the conversion between optical and electrical signals
- A measurement server performs the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the accuracy of the probe positioning
- A computer operating Windows XP
- DASY software
- Remove control with teach pendant and additional circuitry for robot safety such as warming lamps, etc.
- The SAM twin phantom and ELI4 phantom
- A device holder
- Tissue simulating liquid
- Dipole for evaluating the proper functioning of the system

components are described in details in the following sub-sections.

4.1. E-Field Probe

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

➢ **E-Field Probe Specification**

<EX3DV4 Probe>

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

Photo of EX3DV4

➢ **E-Field Probe Calibration**

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

4.2. Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

The input impedance of the DAE is 200MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80dB.

Photo of DAE

4.3. Robot

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

- High precision (repeatability ±0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)

Photo of DASY5

4.4. Measurement Server

The measurement server is based on a PC/104 CPU board with CPU (DASY5: 400 MHz, Intel Celeron), chipdisk (DASY5: 128 MB), RAM (DASY5: 128 MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY I/O board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all the real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operations.

Photo of Server for DASY5

4.5. Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom

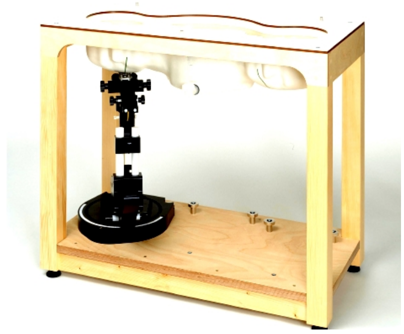


Photo of SAM Phantom

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

<ELI4 Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)
Filling Volume	Approx. 30 liters
Dimensions	Major ellipse axis: 600 mm Minor axis:400 mm

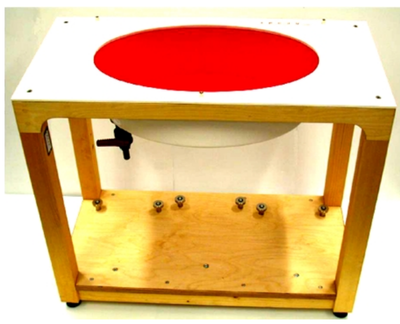


Photo of ELI4 Phantom

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

4.6. Device Holder

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ±0.5mm would produce a SAR uncertainty of ± 20%. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

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

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

Device Holder

4.7. Data Storage and Evaluation

➢ Data Storage

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

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

- Data Evaluation

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

Probe parameters:	- Sensitivity	$Norm_i$, a_{i0}, a_{i1}, a_{i2}
	- Conversion factor	$ConvF_i$
	- Diode compression point	dcp_i
Device parameters:	- Frequency	f
	- Crest factor	cf
Media parameters:	- Conductivity	σ
	- Density	ρ

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multi-meter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power.

The formula for each channel can be given as：

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

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

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

E-field Probes： $\mathbf{E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}}$

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

with V_i = compensated signal of channel i,(i= x, y, z)
$Norm_i$= sensor sensitivity of channel i, (i= x, y, z), μV/(V/m)^2 for E-field Probes
ConvF= sensitivity enhancement in solution
a_{ij}= sensor sensitivity factors for H-field probes
f = carrier frequency [GHz]
E_i= electric field strength of channel iin V/m
H_i= magnetic field strength of channel iin A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

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

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

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

with SAR = local specific absorption rate in W/kg
E_{tot}= total field strength in V/m
σ = conductivity in [mho/m] or [Siemens/m]
ρ = equivalent tissue density in g/cm^3

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

Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

5. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	835MHz System Validation Kit	D835V2	4d154	Jun. 11,2024	Jun. 10,2027
SPEAG	1900MHz System Validation Kit	D1900V2	5d175	Jun. 15,2024	Jun. 14,2027
SPEAG	2450MHz System Validation Kit	D2450V2	910	Jun. 11,2024	Jun. 10,2027
SPEAG	Data Acquisition Electronics	DAE4	387	Sept.02,2024	Sept.01,2025
SPEAG	Dosimetric E-Field Probe	EX3DV4	7396	May 06,2024	May 05,2025
Agilent	ENA Series Network Analyzer	E5071C	MY46317418	Oct.26, 2024	Oct.25, 2025
SPEAG	DAK	DAK-3.5	1226	NCR	NCR
SPEAG	SAM Twin Phantom	QD000P40CD	1802	NCR	NCR
SPEAG	ELI Phantom	QDOVA004AA	2058	NCR	NCR
Mini-Circuits	Amplifier	ZVA-183W-S+	932502132	NCR	NCR
Agilent	Power Meter	N1914A	MY50001102	Oct.26, 2024	Oct.25, 2025
Agilent	Power Sensor	E9323A	US40410647	Jan. 23, 2024	Jan. 22, 2025
Agilent	Power Sensor	E9323A	MY53100007	Jan. 23, 2024	Jan. 22, 2025
CDKMV	Attenuator	6610	6610-1	Oct.20, 2024	Oct.19, 2025
CDKMV	Attenuator	6606	6606-1	Oct.20, 2024	Oct.19, 2025
Agilent	Spectrum Analyzer	N9020A	MY51170037	Oct.26, 2024	Oct.25, 2025
Agilent	Signal Generation	N5182A	MY48180656	Oct.26, 2024	Oct.25, 2025
Worken	Directional Coupler	0110A05601O -10	COM5BNW1A 2	Oct.26, 2024	Oct.25, 2025

Note:

1. The calibration certificate of DASY can be referred to appendix C of this report.
2. The dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The Insertion Loss calibration of Dual Directional Coupler and Attenuator were characterized via the network analyzer and compensated during system check.
4. The dielectric probe kit was calibrated via the network analyzer, with the specified procedure (calibrated in pure water) and calibration kit (standard) short circuit, before the dielectric measurement. The specific procedure and calibration kit are provided by Agilent.
5. In system check we need to monitor the level on the power meter, and adjust the power amplifier level to have precise power level to the dipole; the measured SAR will be normalized to 1W input power according to the ratio of 1W to the input power to the dipole. For system check, the calibration of the power amplifier is deemed not critically required for correct measurement; the power meter is critical and we do have calibration for it.

6. Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 6.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown as followed:

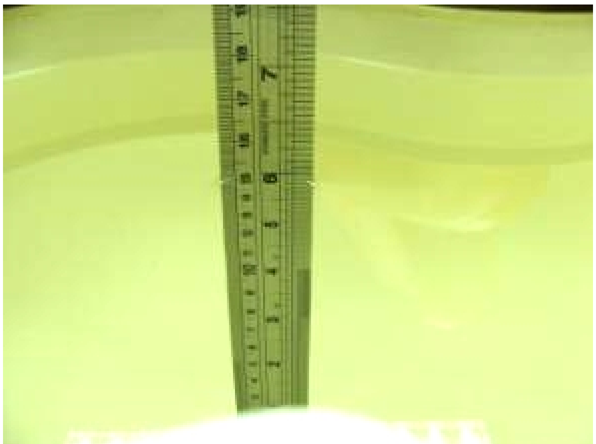


Photo of Liquid Height for Head SAR

The following table shows the measuring results for simulating liquid.

Measured Frequency (MHz)	Target Tissue		Measured Tissue				Liquid Temp.	Test Data
	Permittivity Target (ε r)	Conductivity Target (σ)	Permittivity (ε r)	Conductivity (σ)	Delta (ε r) (%)	Delta (σ) (%)		
824.2	41.79	0.89	41.25	0.87	-1.29	-2.25	22.6	Jan. 03, 2025
826.4	41.79	0.89	41.24	0.86	-1.32	-3.37	22.6	Jan. 03, 2025
835	41.50	0.90	39.95	0.92	-3.73	2.22	22.6	Jan. 03, 2025
1850.2	40.00	1.37	40.26	1.36	0.65	-0.73	22.6	Jan. 04, 2025
1880	39.98	1.38	39.95	1.33	-0.08	-3.62	22.6	Jan. 04, 2025
1900	39.97	1.39	39.81	1.35	-0.40	-2.88	22.6	Jan. 04, 2025
2442	39.25	1.81	39.34	1.85	0.23	2.21	22.6	Jan. 05, 2025
2450	39.20	1.80	39.11	1.76	-0.23	-2.22	22.6	Jan. 05, 2025
2442	39.25	1.81	39.28	1.83	0.08	1.10	22.4	Feb. 05, 2025
2450	39.20	1.80	39.15	1.74	-0.13	-3.33	22.4	Feb. 05, 2025

7. System Verification Procedures

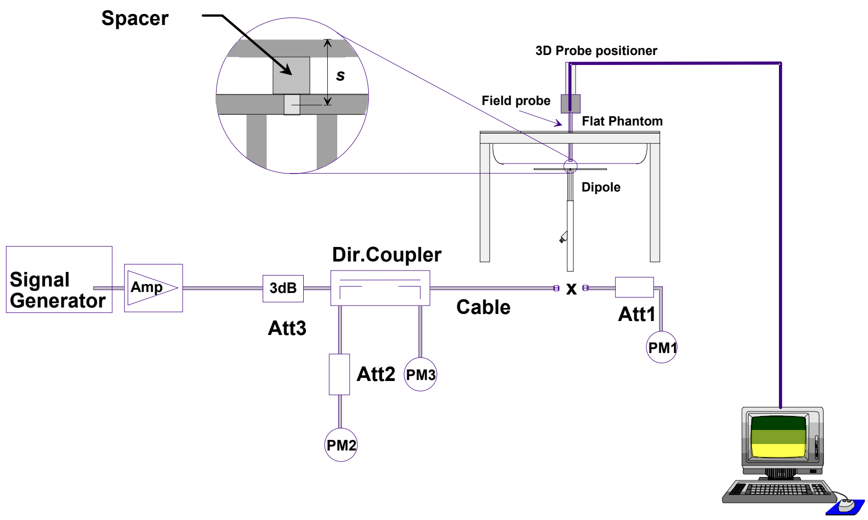
Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. System validation kit includes a dipole, tripod holder to fix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

➢ **Purpose of System Performance check**

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

➢ **System Setup**

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



System Setup for System Evaluation

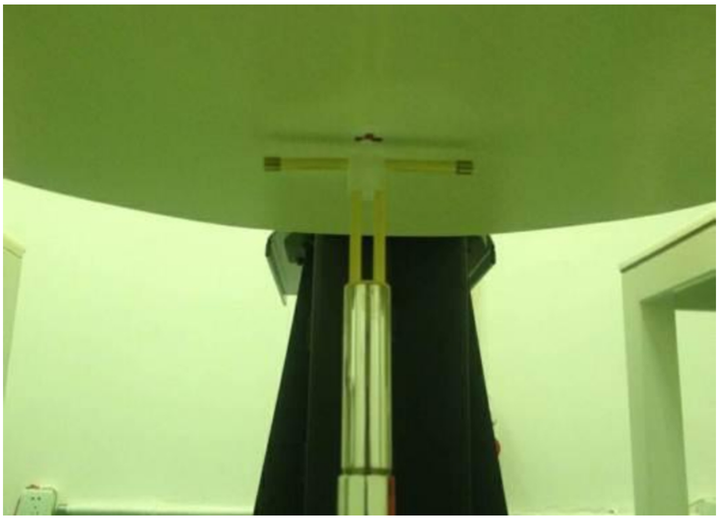


Photo of Dipole Setup

➢ **Validation Results**

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10%. The table below shows the target SAR and measured SAR after normalized to 1W input power. It indicates that the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Frequency (MHz)	Power fed onto reference dipole (mW)	Targeted SAR 1g(W/kg)	Measured SAR 1g(W/kg)	Normalized SAR 1g(W/kg)	Deviation (%)	Test Date
835	250	9.24	2.33	9.32	0.87	Jan. 03, 2025
1900	250	40.4	9.58	38.32	-5.15	Jan. 04, 2025
2450	250	52.4	12.67	50.68	-3.28	Jan. 05, 2025
2450	250	52.4	12.62	50.48	-3.66	Feb. 05, 2025

Target and Measurement SAR after Normalized

Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

8. EUT Testing Position

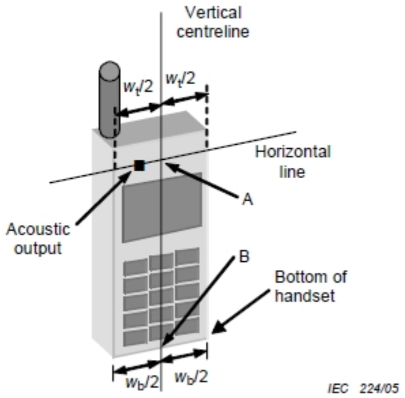
8.1. Head Position

The wireless device define two imaginary lines on the handset, the vertical centreline and the horizontal line, for the handset in vertical orientation as shown in Figures 5a and 5b.

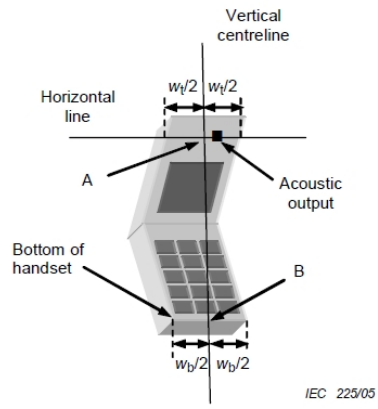
The vertical centreline passes through two points on the front side of the handset: the midpoint of the width W_t of the handset at the level of the acoustic output (point A in Figures 5a and 5b), and the midpoint of the width W_b of the bottom of the handset (point B).

The horizontal line is perpendicular to the vertical centreline and passes through the centre of the acoustic output (see Figures 5a and 5b). The two lines intersect at point A.

Note that for many handsets, point A coincides with the centre of the acoustic output. However, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centreline is not necessarily parallel to the front face of the handset (see Figure 5b), especially for clam-shell handsets, handsets with flip cover pieces, and other irregularly shaped handsets.



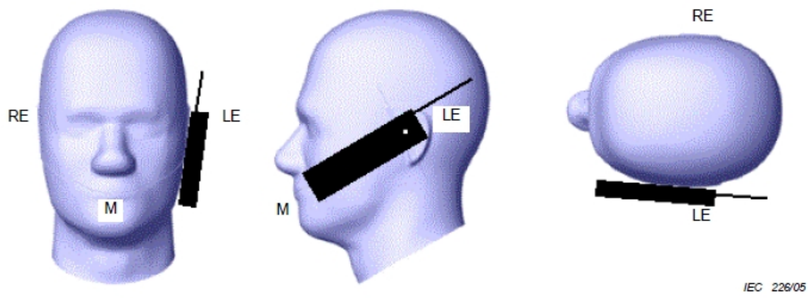
Figures 5a



Figures 5b

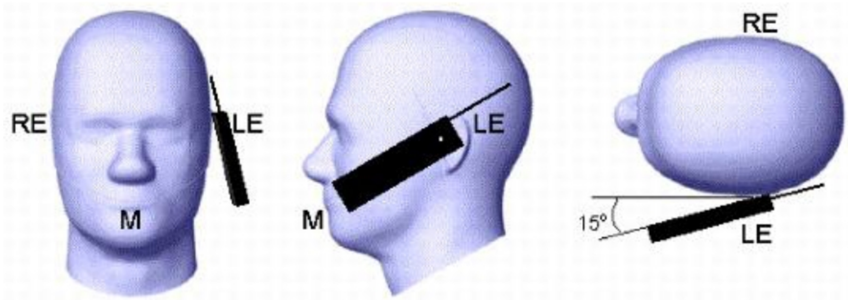
W_t	Width of the handset at the level of the acoustic
W_b	Width of the bottom of the handset
A	Midpoint of the widthwt of the handset at the level of the acoustic output
B	Midpoint of the width wb of the bottom of the handset

Cheek position



Cheek position of the wireless device on the left side of SAM

Tilt position



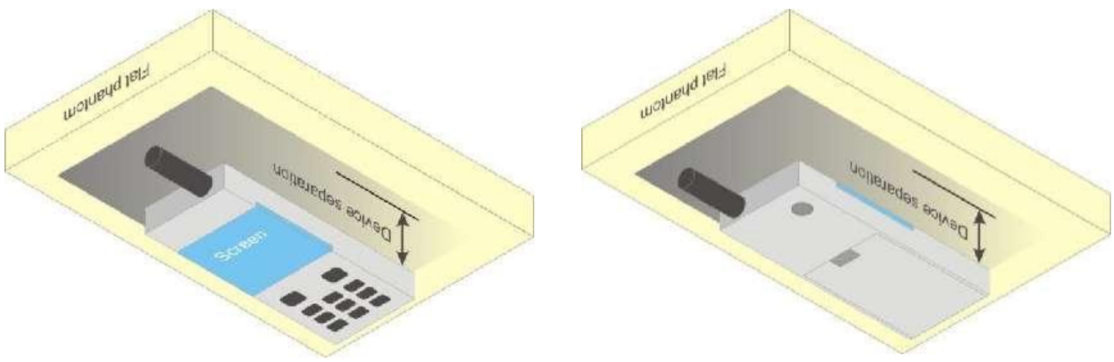
Tilt position of the wireless device on the left side of SAM

8.2. Body Worn Position

(a) To position the device parallel to the phantom surface with either keypad up or down.

(b) To adjust the device parallel to the flat phantom.

(c) To adjust the distance between the device surface and the flat phantom to 0.5 cm.



Body Worn Position

9. 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 middle channel.
(b) Keep EUT to radiate maximum output power or 100% duty factor (if applicable)
(c) Measure output power through RF cable and power meter.
(d) Place the EUT in the positions as setup photos demonstrates.
(e) Set scan area, grid size and other setting on the DASY software.
(f) Measure SAR transmitting at the middle channel for all applicable exposure positions.
(g) Identify the exposure position and device configuration resulting the highest SAR
(h) Measure SAR at the lowest and highest channels attheworst exposure position and device configuration if applicable.

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

9.1. Spatial Peak SAR Evaluation

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

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 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 (SEMCAD). 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 (A/D values and measurement parameters)
(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 3-D 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

9.2. Power Reference Measurement

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

9.3. Area Scan Procedures

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2}\cdot\delta\cdot\ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

9.4. Zoom Scan Procedures

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01 SAR measurement 100 MHz to 6 GHz.

<table>
<tr><th colspan="3"></th><th>≤ 3 GHz</th><th>> 3 GHz</th></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
* When zoom scan is required and the <u>reported</u> SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline
400-003-0500
www.anbotek.com

9.5. 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 aggregateSAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

9.6. Power Drift Monitoring

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

10. Conducted Power

<WLAN 2.4GHz Conducted Power>

Test Mode	Channel	Frequency (MHz)	Average Power(dBm)	Tune-up (dBm)	Test Rate Data
802.11b	1	2412	13.91	14.00	1 Mbps
	7	2442	14.75	15.00	1 Mbps
	11	2462	14.19	14.50	1 Mbps
802.11g	1	2412	12.71	13.00	6 Mbps
	7	2442	14.21	14.50	6 Mbps
	11	2462	14.42	14.50	6 Mbps
802.11n20	1	2412	12.78	13.00	MCS0
	7	2442	**14.75**	15.00	MCS0
	11	2462	14.48	14.50	MCS0

<GSM>

GSM850

Band GSM850	Burst Average Power (dBm)			Frame-Average Power (dBm)		
TX Channel	128	190	251	128	190	251
Frequency (MHz)	824.2	836.6	848.8	824.2	836.6	848.8
RCM	33.75	33.85	33.86	24.72	24.82	24.83
GPRS (GMSK, 1 Tx slot) – CS1	33.65	33.68	33.70	24.62	24.65	24.67
GPRS (GMSK, 2 Tx slots) – CS1	32.61	32.65	32.68	26.59	26.63	26.66
GPRS (GMSK, 3 Tx slots) – CS1	32.57	32.62	32.65	28.31	28.36	28.39
GPRS (GMSK, 4 Tx slots) – CS1	32.56	32.61	32.64	**29.55**	29.6	29.63
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) – 9.03 dB Frame-averaged power = Maximum burst averaged power (2 Tx Slots) – 6.02 dB Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB Frame-averaged power = Maximum burst averaged power (4 Tx Slots) – 3.01 dB						

Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

PCS1900

Band PCS1900	Burst Average Power (dBm)			Frame-Average Power (dBm)		
TX Channel	512	661	810	512	661	810
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8
GSM	29.34	29.20	28.65	20.31	20.17	19.62
GPRS (GMSK, 1 Tx slot) – CS1	29.37	29.26	28.77	20.34	20.23	19.74
GPRS (GMSK, 2 Tx slots) – CS1	28.41	28.35	27.81	22.39	22.33	21.79
GPRS (GMSK, 3 Tx slots) – CS1	26.55	26.50	25.92	22.29	22.24	21.66
GPRS (GMSK, 4 Tx slots) – CS1	25.67	25.62	25.02	**22.66**	22.61	22.01
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) – 9.03 dB Frame-averaged power = Maximum burst averaged power (2 Tx Slots) – 6.02 dB Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB Frame-averaged power = Maximum burst averaged power (4 Tx Slots) – 3.01 dB						

<WCDMA>

Band	WCDMA Band 2			WCDMA Band 5		
TX Channel	9262	9400	9538	4132	4182	4233
Frequency (MHz)	1852.4	1880	1907.6	826.4	836.4	846.6
WCDMA	22.63	**22.68**	22.19	**25.12**	24.86	24.76
HSDPA Subtest-1	21.63	21.72	21.16	24.18	23.91	23.71
HSDPA Subtest-2	21.24	21.24	20.62	23.66	23.40	23.22
HSDPA Subtest-3	21.18	21.26	20.80	23.64	23.44	23.30
HSDPA Subtest-4	21.21	21.26	20.69	23.67	23.42	23.26
HSUPA Subtest-1	20.27	20.35	19.82	22.69	22.50	22.33
HSUPA Subtest-2	19.85	19.80	19.40	22.23	22.00	21.86
HSUPA Subtest-3	20.81	20.90	20.38	23.18	22.99	22.85
HSUPA Subtest-4	19.29	19.35	18.90	21.70	21.51	21.39
HSUPA Subtest-5	21.78	21.84	21.32	24.28	24.02	23.85

Note:

Choose the highest output power mode WCDMA for Band1 at middle channel to test SAR，Choose the highest output power mode WCDMA for Band 5 at Low channel to test SAR determine the worst configuration for further high/low channel test.

<Bluetooth Conducted Power>

Mode	Frequency (MHz)	Conducted Peak Power (dBm)	Tune-up power(dBm)
BLE_1M	2402	4.48	4.50
	2440	4.42	4.50
	2480	3.94	4.00

<Note:

1. Per KDB 447498 D01, the 1-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, where

f(GHz) is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation

The result is rounded to one decimal place for comparison

2. Base on the result of note1, RF exposure evaluation of 2.4G WIFI ,GSM and WCDMA mode is required,Bluetooth test is not required.

3. Per KDB 248227 D01, choose the highest output power channel to test SAR and determine further SAR exclusion.

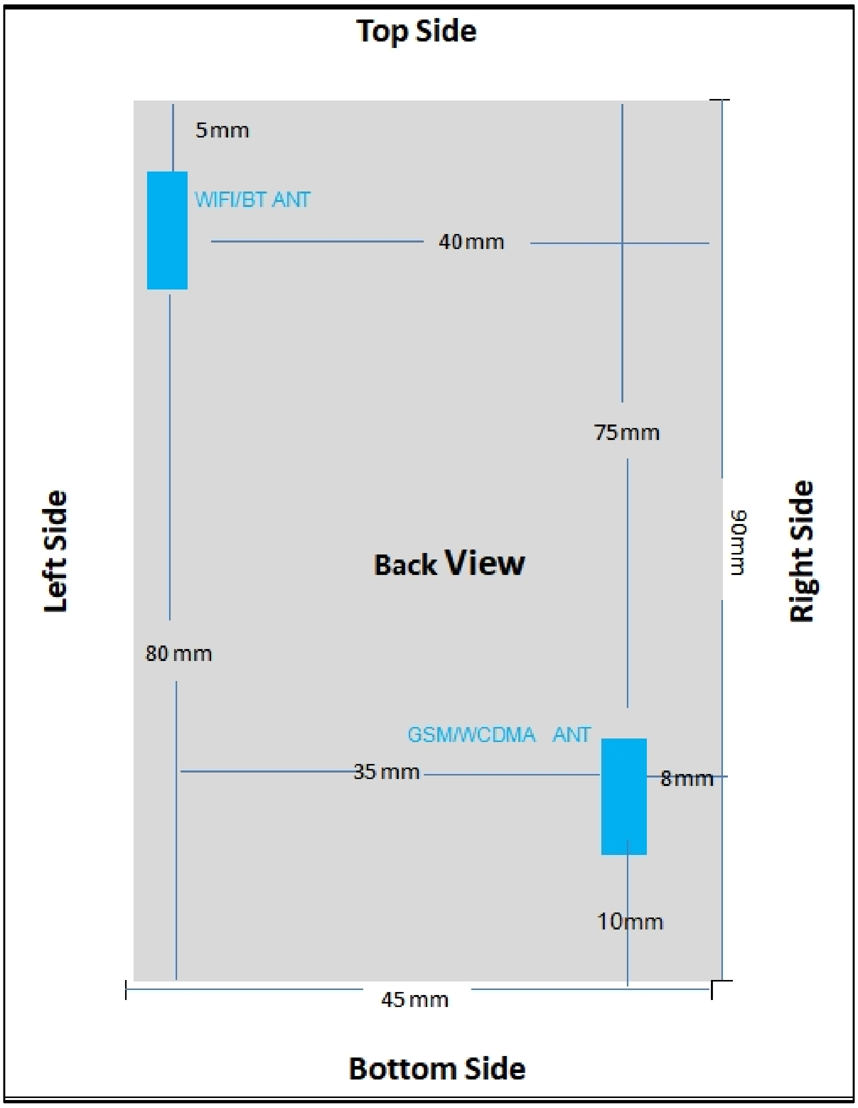
4. Per KDB 248227 D01, In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. SAR is not required for the following 2.4 GHz OFDM conditions:

1) When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.

2) When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

11. Antenna Location



Distance of The Antenna to the EUT surface and edge						
Antennas	Front	Back	Top Side	Bottom Side	Left Side	Right Side
WIFI/BT ANT	<25mm	<25mm	<25mm	>25mm	<25mm	>25mm
GSM/WCDMA ANT	<25mm	<25mm	>25mm	<25mm	>25mm	<25mm

Positions for SAR tests; Body mode						
Antennas	Front	Back	Top Side	Bottom Side	Left Side	Right Side
WIFI/BT ANT	Yes	Yes	Yes	No	Yes	No

12. SAR Test Results Summary

General Note:
1.Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.

Scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.

Reported SAR(W/kg)= Measured SAR(W/kg) Scaling Factor*

2. Per KDB 447498 D01v06, for each exposure position, if the highest output channel reported SAR≤0.8W/kg, other channels SAR testing are not necessary

12.1. Body-worn SAR Results

<WIFI 2.4G>

Plot No.	Band	Mode	Test Position	Channel	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
	WIFI2.4G	802.11n20	Left	7	2442	14.75	15.00	1.059	0.06	0.052	0.055
	WIFI2.4G	802.11n20	Right	7	2442	14.75	15.00	1.059	N/A	N/A	N/A
	WIFI2.4G	802.11n20	Top	7	2442	14.75	15.00	1.059	0.03	0.046	0.049
	WIFI2.4G	802.11n20	Bottom	7	2442	14.75	15.00	1.059	N/A	N/A	N/A
	WIFI2.4G	802.11n20	Front	7	2442	14.75	15.00	1.059	0.11	0.095	0.101
#1	WIFI2.4G	802.11n20	Back	7	2442	14.75	15.00	1.059	0.03	0.158	**0.167**

<GSM>

Band	Mode	Test Position	Channel	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR1g (W/kg)	Reported SAR1g (W/kg)	Plot
GSM850	GPRS(4 Tx slots)	Front	128	29.55	30.00	1.109	0.11	0.426	0.473	
GSM850	GPRS(4 Tx slots)	Back	128	29.55	30.00	1.109	-0.09	0.549	**0.609**	#2
GSM850	GPRS(4 Tx slots)	Back	190	29.6	30.00	1.096	0.05	0.521	0.571	
GSM850	GPRS(4 Tx slots)	Back	251	29.63	30.00	1.089	0.14	0.504	0.549	
GSM850	GPRS(4 Tx slots)	Left	128	29.55	30.00	1.109	N/A	N/A	N/A	
GSM850	GPRS(4 Tx slots)	Right	128	29.55	30.00	1.109	0.02	0.385	0.427	

GSM850	GPRS(4 Tx slots)	Top	128	29.55	30.00	1.109	N/A	N/A	N/A	
GSM850	GPRS(4 Tx slots)	Bottom	128	29.55	30.00	1.109	0.03	0.367	0.407	
PCS1900	GPRS(4 Tx slots)	Front	512	22.66	23.00	1.081	0.09	0.842	0.911	
PCS1900	GPRS(4 Tx slots)	Back	512	22.66	23.00	1.081	-0.04	0.998	**1.079**	#3
PCS1900	GPRS(4 Tx slots)	Back	661	22.61	23.00	1.094	-0.14	0.956	1.046	
PCS1900	GPRS(4 Tx slots)	Back	810	22.01	22.50	1.119	0.07	0.973	1.089	
PCS1900	GPRS(4 Tx slots)	Left	512	22.66	23.00	1.081	N/A	N/A	N/A	
PCS1900	GPRS(4 Tx slots)	Right	512	22.66	23.00	1.081	0.02	0.732	0.792	
PCS1900	GPRS(4 Tx slots)	Top	512	22.66	23.00	1.081	N/A	N/A	N/A	
PCS1900	GPRS(4 Tx slots)	Bottom	512	22.66	23.00	1.081	0.01	0.659	0.713	

<WCDMA>

Band	Mode	Test Position	Channel	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR1g (W/kg)	Reported SAR1g (W/kg)	Plot
2	RMC	Front	9400	22.68	23.00	1.076	-0.07	0.826	0.889	
2	RMC	Back	9400	22.68	23.00	1.076	-0.09	1.114	**1.199**	#4
2	RMC	Back	9262	22.63	23.00	1.089	0.04	1.086	1.183	
2	RMC	Back	9538	22.19	22.50	1.074	0.17	1.095	1.176	
2	RMC	Left	9400	22.68	23.00	1.076	N/A	N/A	N/A	
2	RMC	Right	9400	22.68	23.00	1.076	0.15	0.736	0.792	
2	RMC	Top	9400	22.68	23.00	1.076	N/A	N/A	N/A	
2	RMC	Bottom	9400	22.68	23.00	1.076	-0.08	0.622	0.670	
5	RMC	Front	4132	25.12	25.50	1.091	0.05	0.564	0.616	
5	RMC	Back	4132	25.12	25.50	1.091	0.12	0.614	**0.670**	#5
5	RMC	Back	4182	24.86	25.00	1.033	0.15	0.600	0.620	
5	RMC	Back	4233	24.76	25.00	1.057	0.05	0.591	0.625	
5	RMC	Left	4132	25.12	25.50	1.091	N/A	N/A	N/A	
5	RMC	Right	4132	25.12	25.50	1.091	0.05	0.428	0.467	
5	RMC	Top	4132	25.12	25.50	1.091	N/A	N/A	N/A	
5	RMC	Bottom	4132	25.12	25.50	1.091	0.02	0.406	0.443	

Note:

1. Per KDB 865664 D01V01,for each frequency band ,repeated SAR measurement is required only when the measured SAR is≥0.8W/Kg.
2. Per KDB 865664 D01V01,if the ratio of largest to smallest SAR for the original and first repeated measurement is≤1.2and the measured SAR＜1.45W/Kg, only one repeated measurement is required.
3. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is＞1.20 or when the original or repeated measurement is ≥ 1.45W/Kg
4. The ratio is the difference in percentage between original and repeated measured SAR.

12.2. Head SAR Results

<GSM>

Band	Mode	Test Position	Channel	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR1g (W/kg)	Reported SAR1g (W/kg)	Plot
GSM850	GPRS(4 Tx slots)	Right Cheek	128	29.55	30.00	1.109	0.17	0.298	0.331	
GSM850	GPRS(4 Tx slots)	Right Tilt	128	29.55	30.00	1.109	-0.08	0.145	0.161	
GSM850	GPRS(4 Tx slots)	Left Cheek	128	29.55	30.00	1.109	-0.11	0.305	**0.338**	#6
GSM850	GPRS(4 Tx slots)	Left Tilt	128	29.55	30.00	1.109	-0.04	0.165	0.183	
PCS1900	GPRS(4 Tx slots)	Right Cheek	512	22.66	23.00	1.081	0.09	0.802	0.867	
PCS1900	GPRS(4 Tx slots)	Right Tilt	512	22.66	23.00	1.081	-0.14	0.628	0.679	
PCS1900	GPRS(4 Tx slots)	Left Cheek	512	22.66	23.00	1.081	-0.12	0.813	**0.879**	#7
PCS1900	GPRS(4 Tx slots)	Left Tilt	512	22.66	23.00	1.081	0.13	0.633	0.685	

<WCDMA>

Band	Mode	Test Position	Channel	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR1g (W/kg)	Reported SAR1g (W/kg)	Plot
2	RMC	Right Cheek	9400	22.68	23.00	1.076	-0.12	0.315	0.339	
2	RMC	Right Tilt	9400	22.68	23.00	1.076	-0.07	0.168	0.181	
2	RMC	Left Cheek	9400	22.68	23.00	1.076	-0.13	0.326	**0.351**	#8
2	RMC	Left Tilt	9400	22.68	23.00	1.076	-0.03	0.169	0.182	
5	RMC	Right Cheek	4132	25.12	25.50	1.091	0.08	0.515	0.562	
5	RMC	Right Tilt	4132	25.12	25.50	1.091	0.18	0.322	0.351	

Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

5	RMC	Left Cheek	4132	25.12	25.50	1.091	0.12	0.524	**0.572**	#9
5	RMC	Left Tilt	4132	25.12	25.50	1.091	0.17	0.365	0.398	

<WIFI2.4G>

Band	Mode	Test Position	Channel	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR1g (W/kg)	Reported SAR1g (W/kg)	Plot
WIFI2.4G	802.11n20	Right Cheek	7	14.75	15.00	1.059	0.05	0.011	0.012	
WIFI2.4G	802.11n20	Right Tilt	7	14.75	15.00	1.059	-0.03	0.003	0.003	
WIFI2.4G	802.11n20	Left Cheek	7	14.75	15.00	1.059	-0.06	0.015	**0.016**	#10
WIFI2.4G	802.11n20	Left Tilt	7	14.75	15.00	1.059	-0.02	0.006	0.006	

13. Simultaneous Transmission Analysis

13.1. Simultaneous TX SAR Considerations

No.	Applicable Simultaneous Transmission
1.	GSM+WIFI
2.	WCDMA+WIFI

Note:

1. EUT will choose either GSM/WCDMA/LTE according to the network signal condition; therefore, GSM/WCDMA/LTE cannot transmit simultaneously.
2. Because the Bluetooth SAR is exclusion, so the simultaneous SAR is not evaluate.

13.2. Evaluation of Simultaneous SAR

<Head Exposure Conditions>

Simultaneous transmission SAR for WIFI and GSM

Test Position	GSM 850 SAR (W/Kg)	PCS 1900 SAR (W/Kg)	WIFI2.4GHz SAR (W/Kg)	MAX. ΣSAR (W/Kg)	SAR Limit (W/Kg)
Right Cheek	0.331	0.867	0.011	0.878	1.6
Right Tilt	0.161	0.679	0.003	0.682	1.6
Left Cheek	0.338	0.879	0.016	**0.895**	1.6
Left Tilt	0.183	0.685	0.006	0.691	1.6

Simultaneous transmission SAR for WIFI and WCDMA

Test Position	WCDMA Band 2 SAR (W/Kg)	WCDMA Band 5 SAR (W/Kg)	WIFI2.4G SAR (W/Kg)	MAX. ΣSAR (W/Kg)	SAR Limit (W/Kg)
Right Cheek	0.339	0.562	0.011	0.573	1.6
Right Tilt	0.181	0.351	0.003	0.354	1.6
Left Cheek	0.351	0.572	0.016	0.588	1.6
Left Tilt	0.182	0.398	0.006	0.404	1.6

Note:

1.The SAR value of the 2.4G WIFI adopts the Body-Back SAR, which is the maximum value that can be detected for the 2.4G WIFI SAR. Therefore, the Head-SAR test for the 2.4G WIFI will not be conducted.

<Body Exposure Conditions>

Simultaneous transmission SAR for WIFI and GSM

Test Position	GSM 900 SAR (W/Kg)	PCS 1800 SAR (W/Kg)	WIFI2.4 GHz SAR (W/Kg)	MAX. ΣSAR (W/Kg)	SAR Limit (W/Kg)
Front	0.473	0.911	0.101	1.012	1.6
Back	**0.609**	**1.079**	**0.167**	**1.246**	1.6
Left	N/A	N/A	0.052	0.052	1.6
Right	0.427	0.792	N/A	0.792	1.6
Top	N/A	N/A	0.046	0.046	1.6
Bottom	0.407	0.713	N/A	0.713	1.6

Simultaneous transmission SAR for WIFI and WCDMA

Test Position	WCDMA Band 2 SAR (W/Kg)	WCDMA Band 5 SAR (W/Kg)	WIFI2.4 GHz SAR (W/Kg)	MAX. ΣSAR (W/Kg)	SAR Limit (W/Kg)
Front	0.889	0.616	0.101	0.990	1.6
Back	**1.199**	**0.670**	**0.167**	**1.366**	1.6
Left	N/A	N/A	0.052	0.052	1.6
Right	0.792	0.467	N/A	0.792	1.6
Top	N/A	N/A	0.046	0.046	1.6
Bottom	0.670	0.443	N/A	0.670	1.6

Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

14. Measurement Uncertainty

NO	Source	Uncert. ai（%）	Prob. Dist.	Div. k	ci (1g)	ci (10g)	Stand.Uncert. ui (1g)	Stand.Uncert. ui (10g)	*Veff*
1	Repeat	0. 4	N	1	1	1	0. 4	0. 4	9
Instrument									
2	Probe calibration	6.65	N	2	1	1	3.5	3.5	∞
3	Axial isotropy	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
4	Hemispherical isotropy	9.4	R	$\sqrt{3}$	0.7	0.7	3.9	3.9	∞
5	Boundary effect	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Linearity	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
7	Detection limits	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
8	Readout electronics	0.3	N	1	1	1	0.3	0.3	∞
9	Response time	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
10	Integration time	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
11	Ambient noise	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
12	Ambient reflections	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
13	Probe positioner mech. restrictions	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	∞
14	Probe positioning with respect to phantom shell	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞

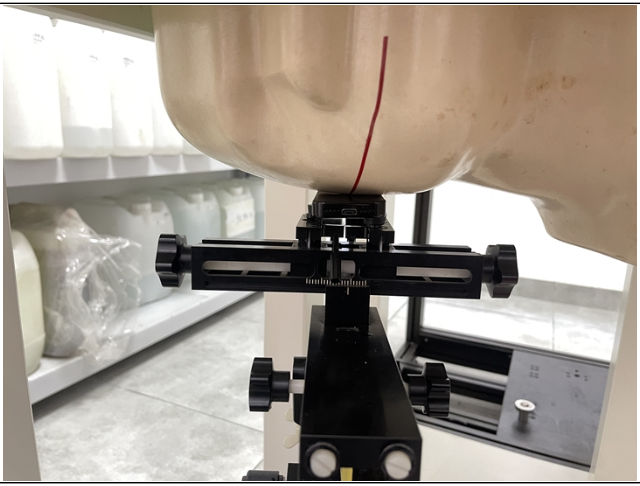
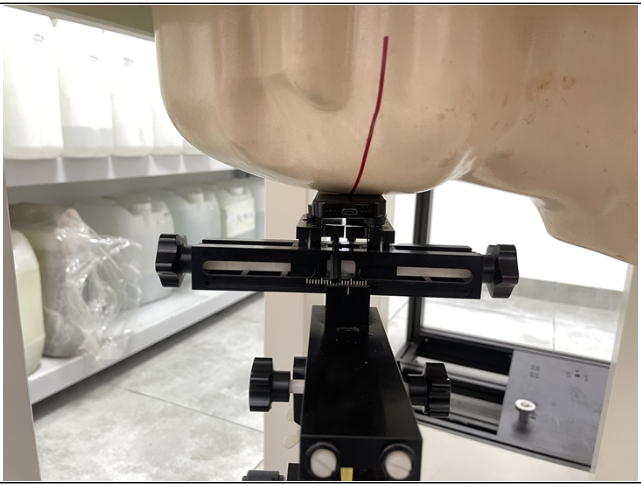
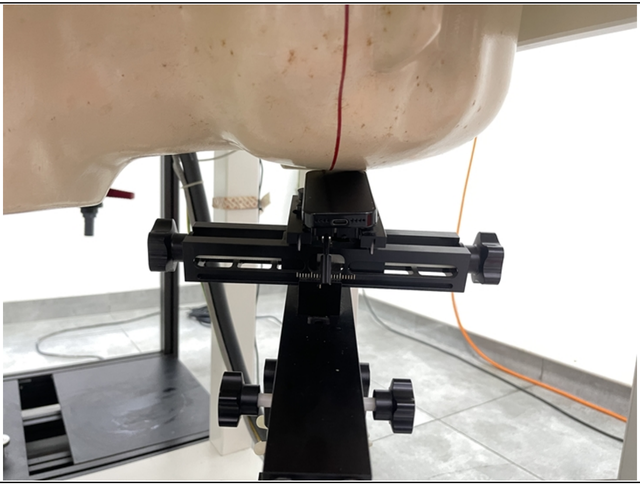
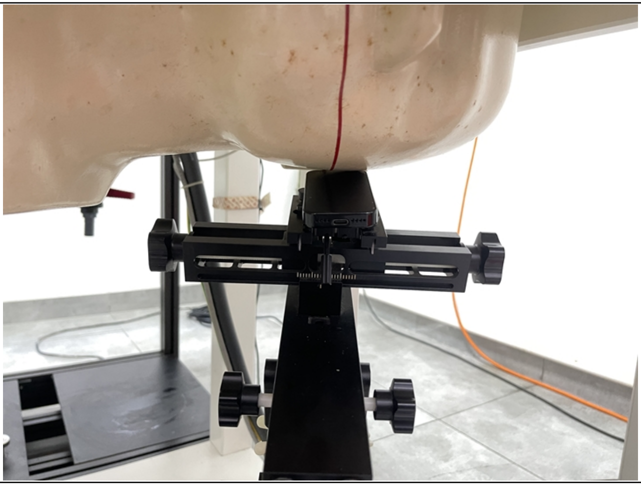
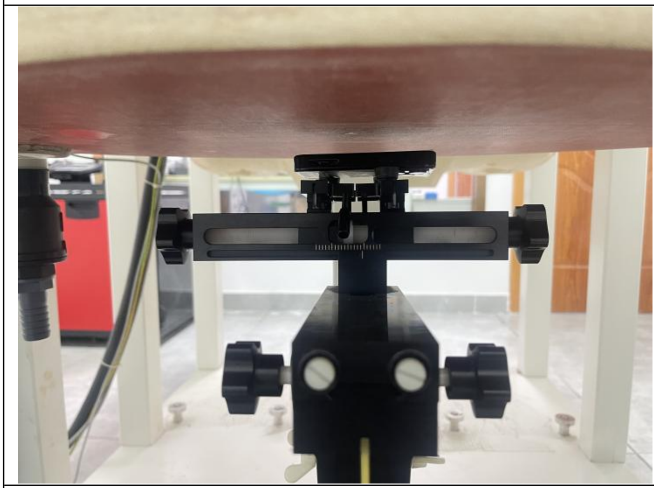
Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

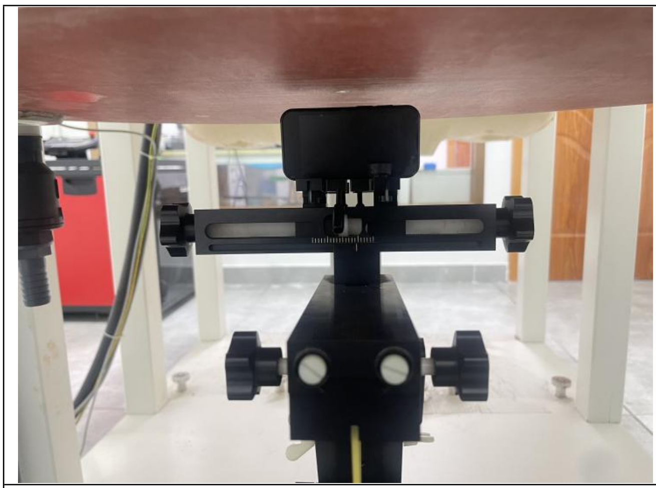
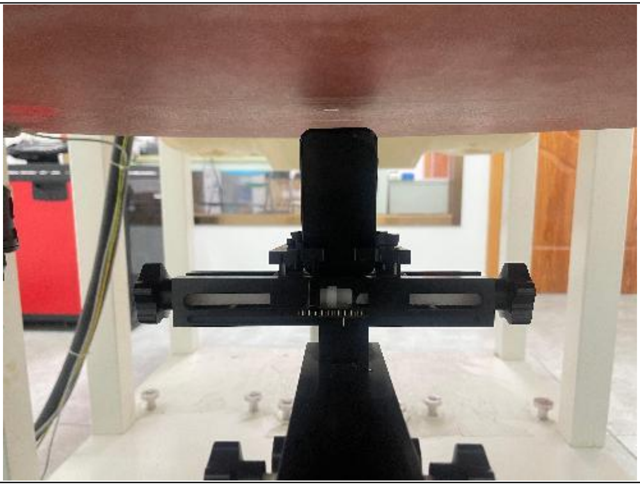
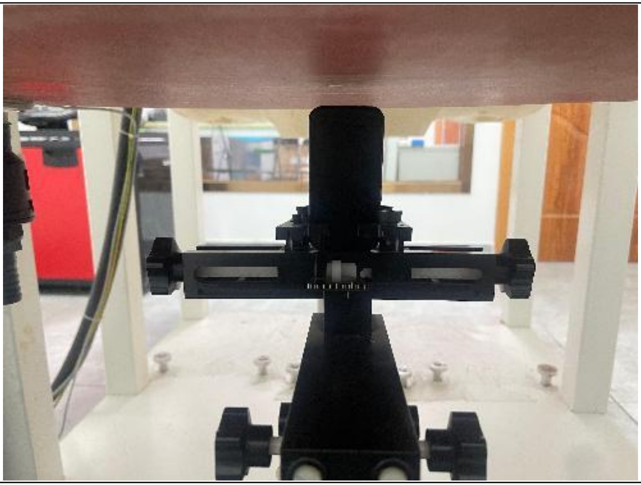
15	Max.SAR evaluation	1.0	R	√3	1	1	0.6	0.6	∞

Test sample related									
16	Device positioning	3.8	N	1	1	1	3.8	3.8	99
17	Device holder	5.1	N	1	1	1	5.1	5.1	5
18	Drift of output power	5.0	R	√3	1	1	2.9	2.9	∞
Phantom and set-up									
19	Phantom uncertainty	4.0	R	√3	1	1	2.3	2.3	∞
20	Liquid conductivity (target)	5.0	R	√3	0.64	0.43	1.8	1.2	∞
21	Liquid conductivity (meas)	2.5	N	1	0.64	0.43	1.6	1.2	∞
22	Liquid Permittivity (target)	5.0	R	√3	0.6	0.49	1.7	1.5	∞
23	Liquid Permittivity (meas)	2.5	N	1	0.6	0.49	1.5	1.2	∞
Combined standard			RSS	$U_c = \sqrt{\sum_{i=1}^{n} C_i^2 U_i^2}$			11.4%	11.3%	236
Expanded uncertainty(P=95%)		$U = k U_c$,k=2					**22.8%**	**22.6%**	

Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

Appendix A. EUT Photos and Test Setup Photos

	
Left Cheek	**Left Tilt**
	
Right Cheek	**Right Tilt**
	
Body Front(10mm)	**Body Back(10mm)**

	
Body Left(10mm)	**Body Right(10mm)**
	
Body Top(10mm)	**Body Bottom(10mm)**

Appendix B. Plots of SAR System Check

835MHz System Check Date:Jan/03/2025

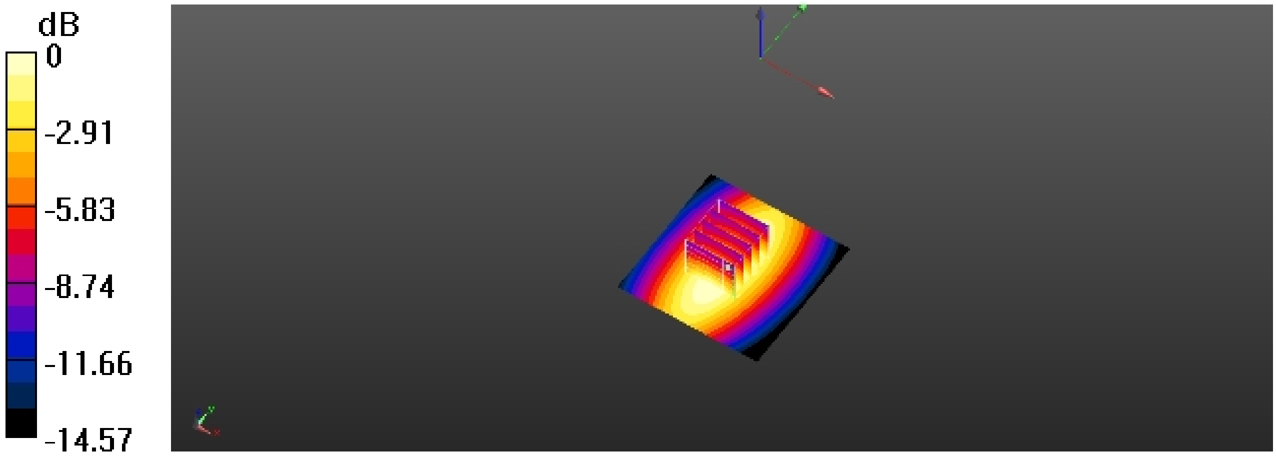
DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d154

Communication System: CW; Frequency: 835MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 835 MHz; σ = 0.92 S/m; εr = 39.95; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
Probe: EX3DV4 - SN7396; ConvF(9.71, 9.71, 9.71); Calibrated: May 06, 2024;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn387; Calibrated: Sep.02.2024;
Phantom: ELI4; Type: QDOVA004AA; Serial:2058
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Area Scan (61x91x1): Measurement grid: dx=1.000mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 2.9 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.81 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 3.6 W/kg
SAR(1 g) = 2.33 W/kg; SAR(10 g) = 1.5 W/kg
Maximum value of SAR (measured) = 2.5W/kg



1900MHz System Check Date:Jan/04/2025

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

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1900 MHz; σ = 1.35S/m; εr = 39.81; ρ = 1000 kg/m3

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7396; ConvF(8.13, 8.13, 8.13); Calibrated: May 06, 2024;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn387; Calibrated: Sep.02.2024;

Phantom: ELI4; Type: QDOVA004AA; Serial:2058

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Area Scan (61x91x1): Measurement grid: dx=1.000mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 14.4 W/kg

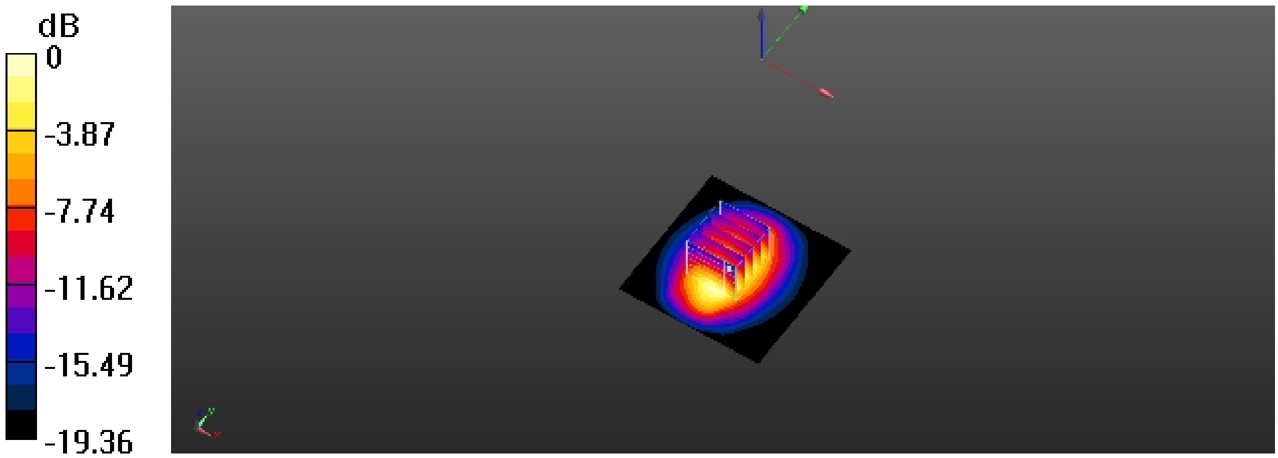
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 61.36 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 19.7W/kg

SAR(1 g) = 9.58 W/kg; SAR(10 g) = 4.07 W/kg

Maximum value of SAR (measured) = 10.6W/kg



2450MHz System Check Date:Jan/05/2025

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 5d175

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 2450 MHz; σ = 1.76S/m; εr = 39.11; ρ = 1000 kg/m3

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7396; ConvF(7.57, 7.57, 7.57); Calibrated: May 06, 2024;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn387; Calibrated: Sep.02.2024;

Phantom: ELI4; Type: QDOVA004AA; Serial:2058

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Area Scan (61x91x1): Measurement grid: dx=1.000mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 19.8 W/kg

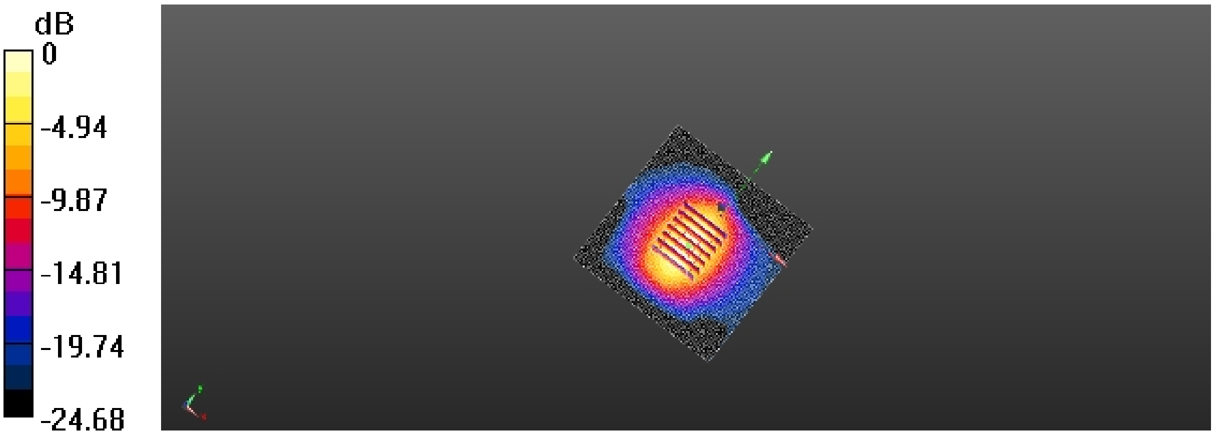
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 85.2V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 27.3W/kg

SAR(1 g) = 12.67 W/kg; SAR(10 g) = 5.62 W/kg

Maximum value of SAR (measured) = 20.6W/kg



Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

2450MHz System Check Date:Feb/05/2025

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 5d175

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 2450 MHz; σ = 1.74S/m; εr = 39.15; ρ = 1000 kg/m3

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7396; ConvF(7.57, 7.57, 7.57); Calibrated: May 06, 2024;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn387; Calibrated: Sep.02.2024;

Phantom: ELI4; Type: QDOVA004AA; Serial:2058

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Area Scan (61x91x1): Measurement grid: dx=1.000mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 20.3 W/kg

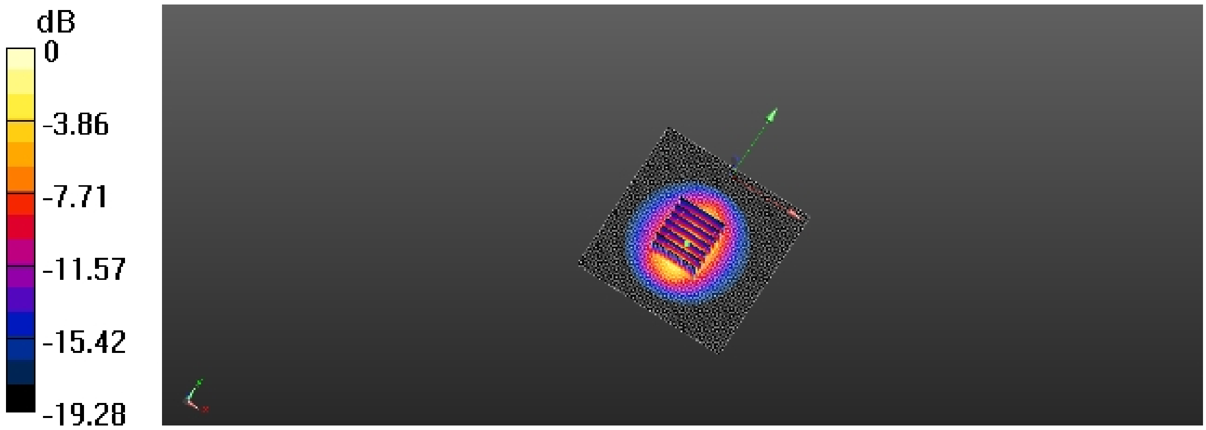
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 84.8V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 28.3W/kg

SAR(1 g) = 12.62 W/kg; SAR(10 g) = 5.65 W/kg

Maximum value of SAR (measured) = 20.4W/kg



Appendix C. Plots of SAR Test Data

#1 Date:Jan/05/2025

WIFI 2.4G_802.11n20_Body Back _Ch7

Communication System: UID 0, wifi (fcc) (0); Frequency: 2442 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 2442MHz; σ = 1.85 S/m; ε_r = 39.34; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7396; ConvF(7.57, 7.57, 7.57); Calibrated: May 06,2024;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn387; Calibrated: Sep.02,2024

Phantom: ELI4; Type: QDOVA004AA; Serial:2058

Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Area Scan (91x161x1): Measurement grid: dx=1.200mm, dy=1.200mm

Maximum value of SAR (measured) = 1.63 W/kg

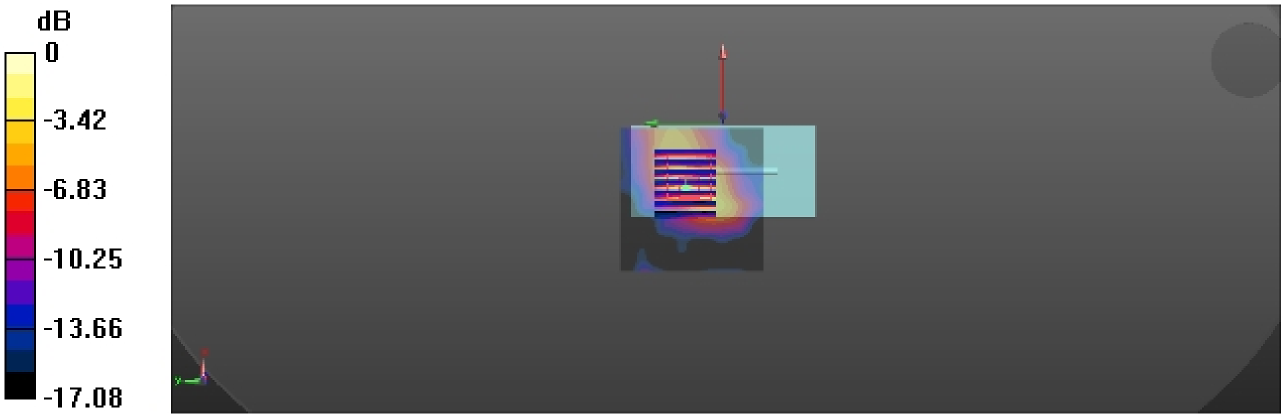
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.734 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 1.86 W/kg

SAR(1 g) = 0.158 W/kg; SAR(10 g) = 0.064W/kg

Maximum value of SAR (measured) = 0.169W/kg



#2 Date:Jan/03/2025

GSM850_Body Back _Ch128

Communication System: UID; Frequency: 824.2MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 824.2MHz; σ = 0.87 S/m; ε_r = 41.25; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7396; ConvF(9.71, 9.71, 9.71); Calibrated: May 06,2024;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn387; Calibrated: Sep.02,2024

Phantom: ELI4; Type: QDOVA004AA; Serial:2058

Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Area Scan (91x161x1): Measurement grid: dx=1.200mm, dy=1.200mm

Maximum value of SAR (measured) = 1.65 W/kg

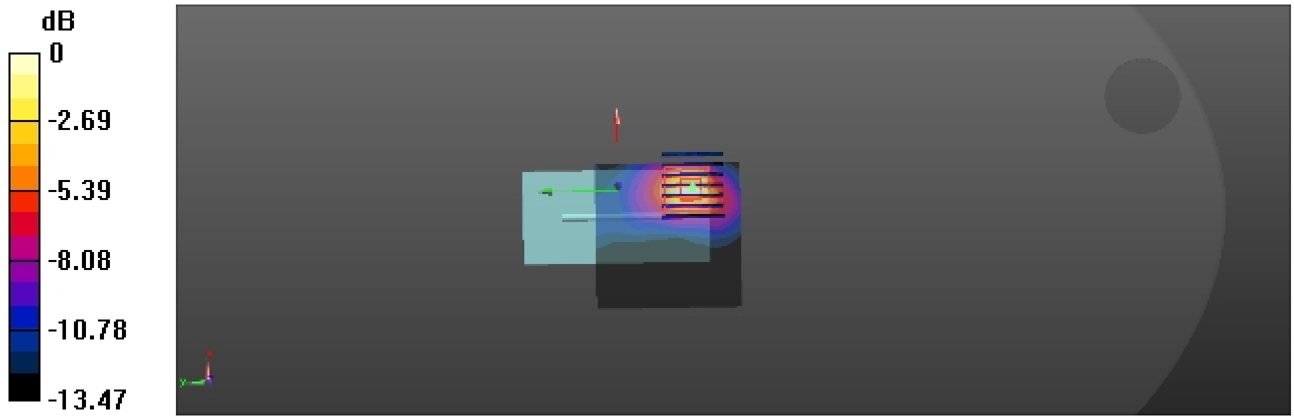
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.78 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 1.83 W/kg

SAR(1 g) = 0.549 W/kg; SAR(10 g) = 0.342 W/kg

Maximum value of SAR (measured) = 0.852W/kg



#3 Date:Jan/04/2025

PCS1900_Body Back _Ch512

Communication System: UID; Frequency: 1850.2MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1850.2MHz; σ = 1.36 S/m; ε_r =40.26; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7396; ConvF(8.13, 8.13, 8.13); Calibrated: May 06,2024;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn387; Calibrated: Sep.02,2024

Phantom: ELI4; Type: QDOVA004AA; Serial:2058

Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Area Scan (91x161x1): Measurement grid: dx=1.200mm, dy=1.200mm

Maximum value of SAR (measured) = 2.346 W/kg

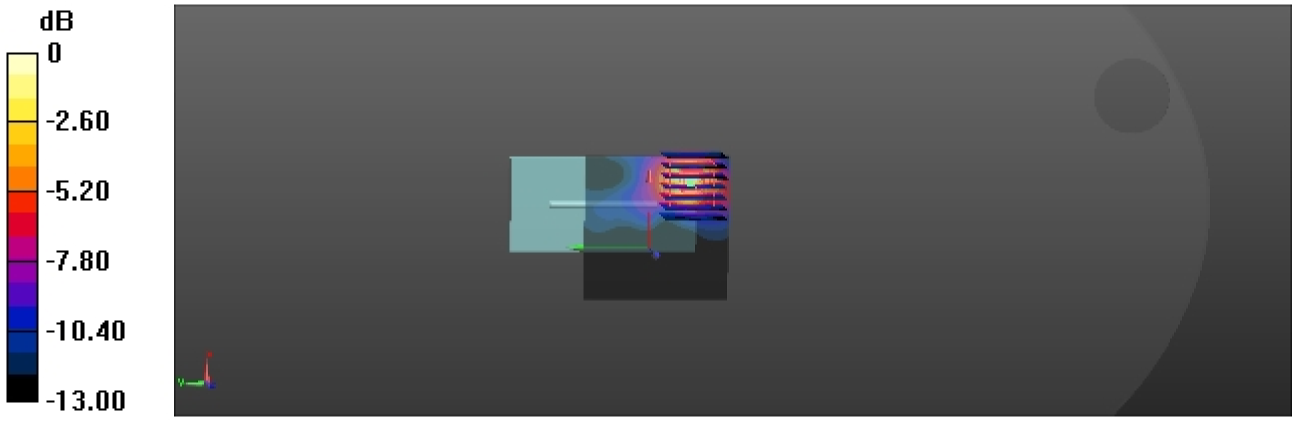
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.231 V/m; Power Drift = =-0.04 dB

Peak SAR (extrapolated) = 3.451 W/kg

SAR(1 g) = 0.998 W/kg; SAR(10 g) = 0.462W/kg

Maximum value of SAR (measured) = 1.235 W/kg



#4 Date: Jan/04/2025

WCDMA Band 2_Body Back _Ch9400

Communication System: UID; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f =1880 MHz; σ = 1.33 S/m; ε_r = 39.95; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7396; ConvF(8.13, 8.13, 8.13); Calibrated: May 06,2024;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn387; Calibrated: Sep.02,2024

Phantom: ELI4; Type: QDOVA004AA; Serial:2058

Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Area Scan (91x161x1): Measurement grid: dx=1.200mm, dy=1.200mm

Maximum value of SAR (measured) = 2.336 W/kg

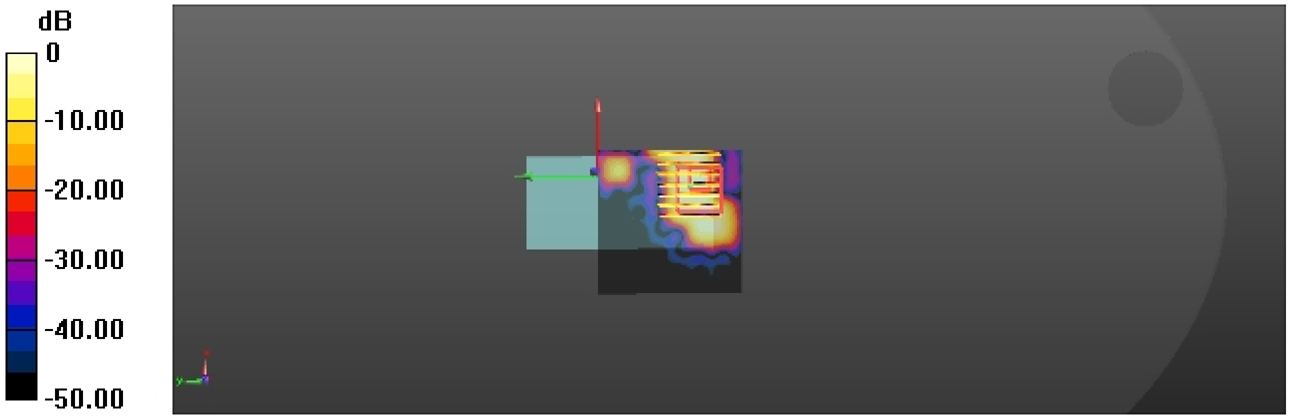
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.537 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) =3.685 W/kg

SAR(1 g) = 1.114 W/kg; SAR(10 g) = 0.638 W/kg

Maximum value of SAR (measured) = 1.462 W/kg



#5 Date: Jan/03/2025

WCDMA Band 5_Body Back _Ch4132

Communication System: UID; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.86 S/m; ε_r = 41.24; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7396; ConvF(9.71, 9.71, 9.71); Calibrated: May 06,2024;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn387; Calibrated: Sep.02,2024

Phantom: ELI4; Type: QDOVA004AA; Serial:2058

Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Area Scan (91x161x1): Measurement grid: dx=1.200mm, dy=1.200mm

Maximum value of SAR (measured) = 2.564 W/kg

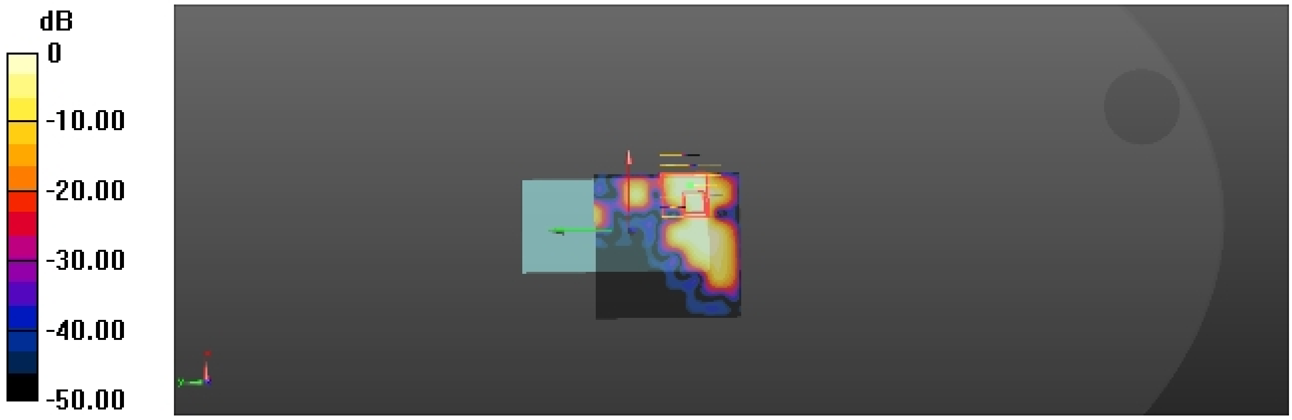
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.384 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 3.527 W/kg

SAR(1 g) = 0.614 W/kg; SAR(10 g) = 0.381 W/kg

Maximum value of SAR (measured) = 0.768 W/kg



Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

#6 Date: Jan/03/2025

GSM 850_Left Check_Ch128

Communication System: UID; Frequency: 824.2 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.87 S/m; ε_r = 41.25; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7396; ConvF(9.71,9.71, 9.71); Calibrated: May 06,2024;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn387; Calibrated: Sep.02,2024

Phantom: SAM; Type: QD000P40CD; Serial:1802

Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Area Scan (91x161x1): Measurement grid: dx=1.200mm, dy=1.200mm

Maximum value of SAR (measured) =2.367 W/kg

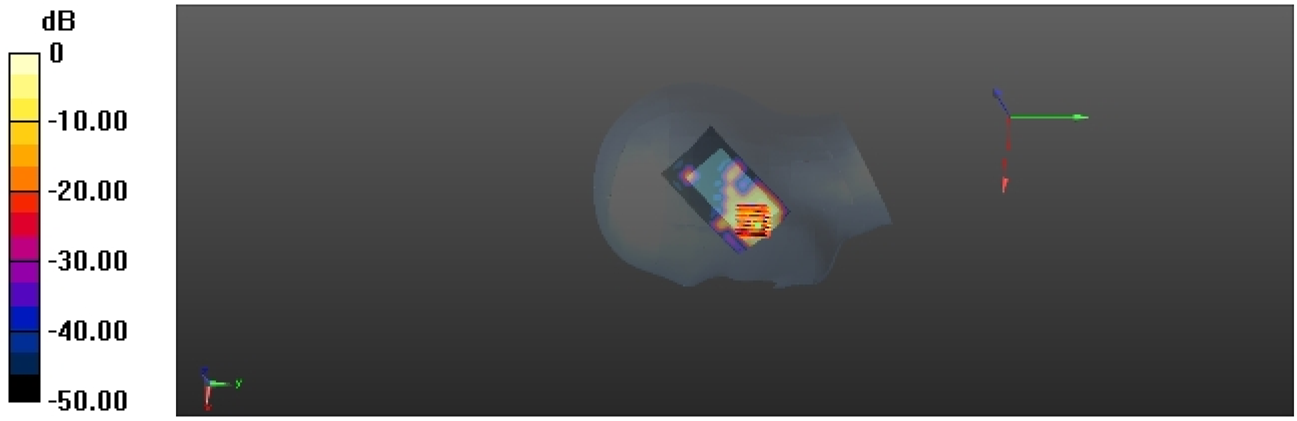
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.892 V/m; Power Drift =-0.11 dB

Peak SAR (extrapolated) = 3.468 W/kg

SAR(1 g) = 0.305 W/kg; SAR(10 g) = 0.108 W/kg

Maximum value of SAR (measured) = 0.552 W/kg



Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

#7

Date:Jan/04/2025

PCS1900_Left Check_Ch512

Communication System: UID; Frequency: 1850.2 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.36 S/m; ε_r = 40.26; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7396; ConvF(8.13, 8.13, 8.13); Calibrated: May 06,2024;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn387; Calibrated: Sep.02,2024

Phantom: SAM; Type: QD000P40CD; Serial:1802

Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Area Scan (91x161x1): Measurement grid: dx=1.200mm, dy=1.200mm

Maximum value of SAR (measured) = 2.814 W/kg

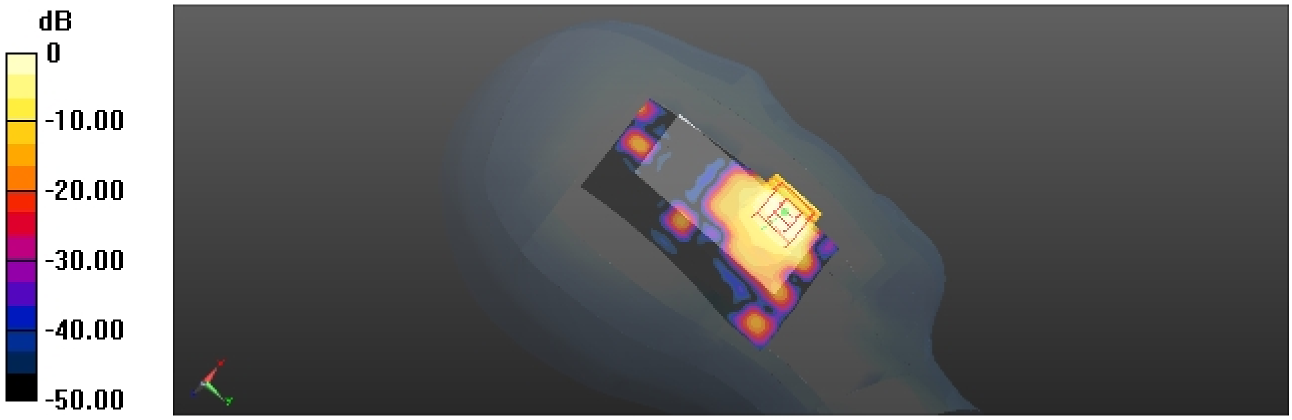
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.688 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 3.524 W/kg

SAR(1 g) = 0.813 W/kg; SAR(10 g) = 0.387 W/kg

Maximum value of SAR (measured) = 1.128 W/kg



#8 Date: Jan/04/2025

WCDMA Band2_Left Check_Ch9400

Communication System: UID; Frequency:1880 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1880 MHz; σ = 1.33 S/m; ε_r = 39.95; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7396; ConvF(8.13, 8.13, 8.13); Calibrated: May 06,2024;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn387; Calibrated: Sep.02,2024

Phantom: SAM; Type: QD000P40CD; Serial:1802

Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Area Scan (91x161x1): Measurement grid: dx=1.200mm, dy=1.200mm

Maximum value of SAR (measured) = 2.331 W/kg

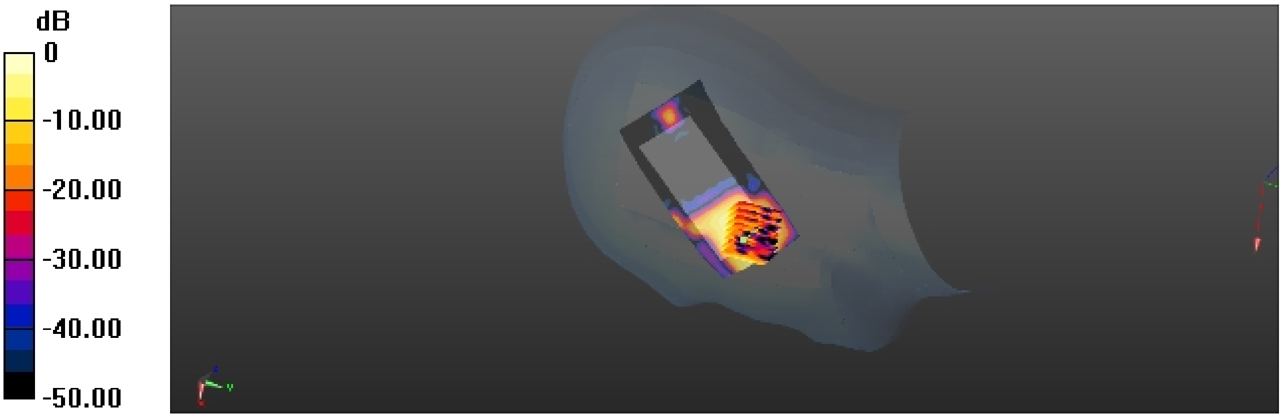
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.145 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) =2.335 W/kg

SAR(1 g) = 0.326 W/kg; SAR(10 g) = 0.152 W/kg

Maximum value of SAR (measured) = 0.537 W/kg



#9 Date: Jan/03/2025

WCDMA Band5_Left Check_Ch4132

Communication System: UID; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 826.4MHz; σ = 0.86 S/m; ε_r = 41.24; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7396; ConvF(9.71, 9.71, 9.71); Calibrated: May 06,2024;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn387; Calibrated: Sep.02,2024

Phantom: SAM; Type: QD000P40CD; Serial:1802

Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Area Scan (91x161x1): Measurement grid: dx=1.200mm, dy=1.200mm

Maximum value of SAR (measured) = 2.364 W/kg

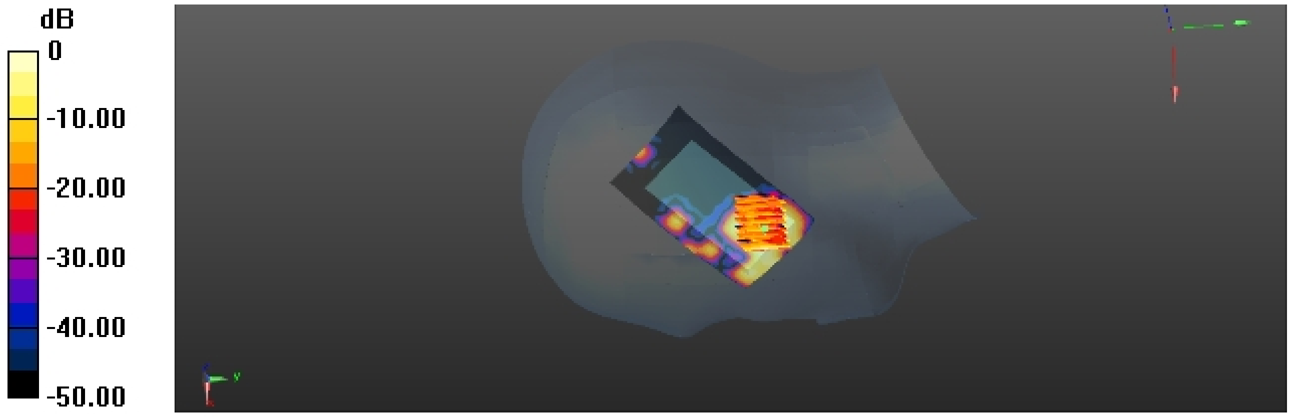
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.912 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 1.866 W/kg

SAR(1 g) = 0.524 W/kg; SAR(10 g) = 0.371 W/kg

Maximum value of SAR (measured) = 0.687 W/kg



#10 Date: Feb/05/2025

WIFI2.4G_802.11n20_Left Check_Ch7

Communication System: UID 0, wifi (fcc) (0); Frequency: 2442 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 2442MHz; σ = 1.83 S/m; ε_r = 39.28; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7396; ConvF(7.57, 7.57, 7.57); Calibrated: May 06,2024;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn387; Calibrated: Sep.02,2024

Phantom: ELI4; Type: QDOVA004AA; Serial:2058

Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Area Scan (91x161x1): Measurement grid: dx=1.200mm, dy=1.200mm

Maximum value of SAR (measured) = 1.58 W/kg

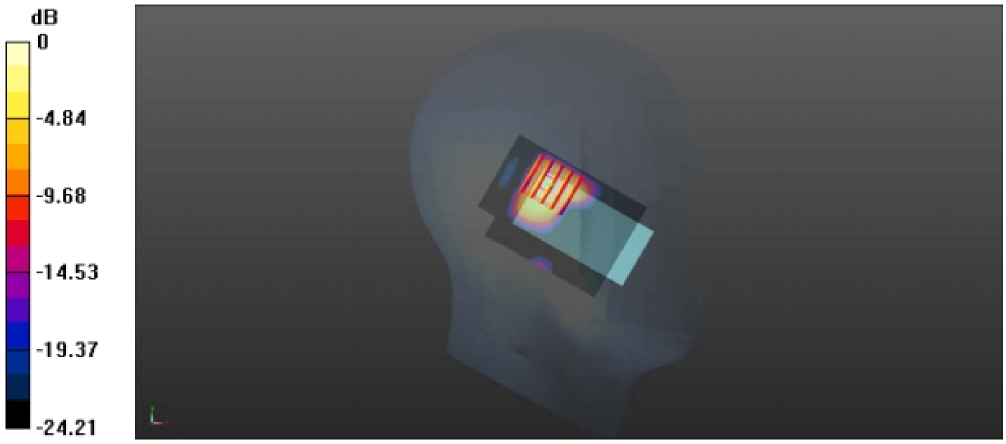
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.658 V/m; Power Drift =-0.06 dB

Peak SAR (extrapolated) = 1.79 W/kg

SAR(1 g) = 0.015 W/kg; SAR(10 g) = 0.005W/kg

Maximum value of SAR (measured) = 0.018W/kg



Appendix A. DASY System Calibration Certificate

Schmid & Partner Engineering AG **s p e a g**

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 44 245 9700, Fax +41 44 245 9779
info@speag.com, http://www.speag.com

IMPORTANT NOTICE

USAGE OF THE DAE 4

The DAE unit is a delicate, high precision instrument and requires careful treatment by the user. There are no serviceable parts inside the DAE. Special attention shall be given to the following points:

Battery Exchange: The battery cover of the DAE4 unit is closed using a screw, over tightening the screw may cause the threads inside the DAE to wear out.

Shipping of the DAE: Before shipping the DAE to SPEAG for calibration, remove the batteries and pack the DAE in an antistatic bag. This antistatic bag shall then be packed into a larger box or container which protects the DAE from impacts during transportation. The package shall be marked to indicate that a fragile instrument is inside.

E-Stop Failures: Touch detection may be malfunctioning due to broken magnets in the E-stop. Rough handling of the E-stop may lead to damage of these magnets. Touch and collision errors are often caused by dust and dirt accumulated in the E-stop. To prevent E-stop failure, the customer shall always mount the probe to the DAE carefully and keep the DAE unit in a non-dusty environment if not used for measurements.

Repair: Minor repairs are performed at no extra cost during the annual calibration. However, SPEAG reserves the right to charge for any repair especially if rough unprofessional handling caused the defect.

DASY Configuration Files: Since the exact values of the DAE input resistances, as measured during the calibration procedure of a DAE unit, are not used by the DASY software, a nominal value of 200 MOhm is given in the corresponding configuration file.

Important Note:
Warranty and calibration is void if the DAE unit is disassembled partly or fully by the Customer.

Important Note:
Never attempt to grease or oil the E-stop assembly. Cleaning and readjusting of the E-stop assembly is allowed by certified SPEAG personnel only and is part of the annual calibration procedure.

Important Note:
To prevent damage of the DAE probe connector pins, use great care when installing the probe to the DAE. Carefully connect the probe with the connector notch oriented in the mating position. Avoid any rotational movement of the probe body versus the DAE while turning the locking nut of the connector. The same care shall be used when disconnecting the probe from the DAE.

Schmid & Partner Engineering

TN_BR040315AD DAE4.doc 11.12.2009

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
Servizio svizzero di taratura
S Swiss Calibration Service

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

Accreditation No.: SCS 0108

Client Anbotek (Auden)

Certificate No: DAE4-387_Sep02

CALIBRATION CERTIFICATE

Object	DAE4 - SD 000 D04 BM - SN: 387
Calibration procedure(s)	QA CAL-06.v29 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	September 02, 2024

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	15-Aug-24 (No:22092)	Aug-25
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	05-Jan-24 (in house check)	In house check: Jan-25
Calibrator Box V2.1	SE UMS 006 AA 1002	05-Jan-24 (in house check)	In house check: Jan-25

	Name	Function	Signature
Calibrated by:	Dominique Steffen	Laboratory Technician	
Approved by:	Sven Kühn	Deputy Manager	i.V.

Issued: September 02, 2024

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

Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

Glossary

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle*: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
  - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
  - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
  - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
  - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
  - *Input Offset Measurement*: Output voltage and statistical results over a large number of zero voltage measurements.
  - *Input Offset Current:* Typical value for information; Maximum channel input offset current, not considering the input resistance.
  - *Input resistance:* Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
  - *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
  - *Power consumption:* Typical value for information. Supply currents in various operating modes.

Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range:	1LSB =	6.1μV ,	full range =	-100...+300 mV
Low Range:	1LSB =	61nV ,	full range =	-1.......+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	404.489 ± 0.02% (k=2)	404.852 ± 0.02% (k=2)	404.862 ± 0.02% (k=2)
Low Range	3.97827 ± 1.50% (k=2)	3.95875 ± 1.50% (k=2)	3.97982 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	53.0 ° ± 1 °

Address: Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Tel:(86)0755-26066440 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com