SAR Test Report

Report No.: AGC03739230301EH01

PRODUCT DESIGNATION	:	Dual Band Digital Two Way Radio
BRAND NAME	:	VITAI, JUENTAI, ZASTONE
MODEL NAME	:	VDG-UV008, JD-UV008, ZT-UV008
APPLICANT	:	VITAI ELECTRONICS CO., LIMITED
DATE OF ISSUE	:	Apr. 13, 2023
STANDARD(S)	:	EN 62209-2:2010; EN50566:2017;
REPORT VERSION	:	V1.0

Attestation of Global Compliance(Shenzhen) Co., Ltd.

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Apr. 13, 2023	Valid	Initial Release

Test Report

Applicant Name	VITAI ELECTRONICS CO., LIMITED
Applicant Address	Room 1901 Buiding 1, Zhongjun Tianfeng, Jiangbinbei Road, Quanzhou, Fujian Province, China
Manufacturer Name	VITAI ELECTRONICS CO., LIMITED
Manufacturer Address	Room 1901 Buiding 1, Zhongjun Tianfeng, Jiangbinbei Road, Quanzhou, Fujian Province, China
Factory Name	VITAI ELECTRONICS CO., LIMITED
Factory Address	Room 1901 Buiding 1, Zhongjun Tianfeng, Jiangbinbei Road, Quanzhou, Fujian Province, China
Product Designation	Dual Band Digital Two Way Radio
Brand Name	VITAI, JUENTAI, ZASTONE
Model Name	VDG-UV008, JD-UV008, ZT-UV008
Different Description	Only the model name & brand name are different.
EUT Voltage	DC7.4 V
Applicable Standard	EN 62209-2:2010; EN50566:2017;
Date of receipt of test item	Mar. 24, 2023
Test Date	Apr. 03, 2023 to Apr. 04, 2023
Performed Location	Attestation of Global Compliance(Shenzhen) Co., Ltd.
	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao 'an District, Shenzhen, Guangdong, China
Report Template	AGCRT-EC-PTT/SAR (2021-04-20)

Note: The results of testing in this report apply to the product/system which was tested only.

Prepared By Thea Huang

Thea Huang (Project Engineer) Apr. 13, 2023

Reviewed By Calvin Liu

Calvin Liu (Reviewer) Apr. 13, 2023

Approved By Max Zhang

Max Zhang (Authorized Officer) Apr. 13, 2023

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1. SUMMARY OF MAXIMUM SAR VALUE

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

Highest Report standalone SAR Summary (50% duty cycle)

Frequency Band	Mode	Separation	Highest Reported 10g-SAR(W/kg)		
			Face up (with 25mm separation)	Body back 0mm with all accessories	Hand (with 0mm separation)
450	Analog	12.5KHz	3.166	4.657	7.567
	Digital		0.505	0.848	2.793
150	Analog	12.5KHz	0.134	0.204	3.063
	Digital		0.093	0.149	0.862

This device is compliance with Specific Absorption Rate (SAR) for Occupational / Controlled Exposure Environment limits (10.0W/kg for body and face up and 20.0W/kg for hand).

2. GENERAL INFORMATION

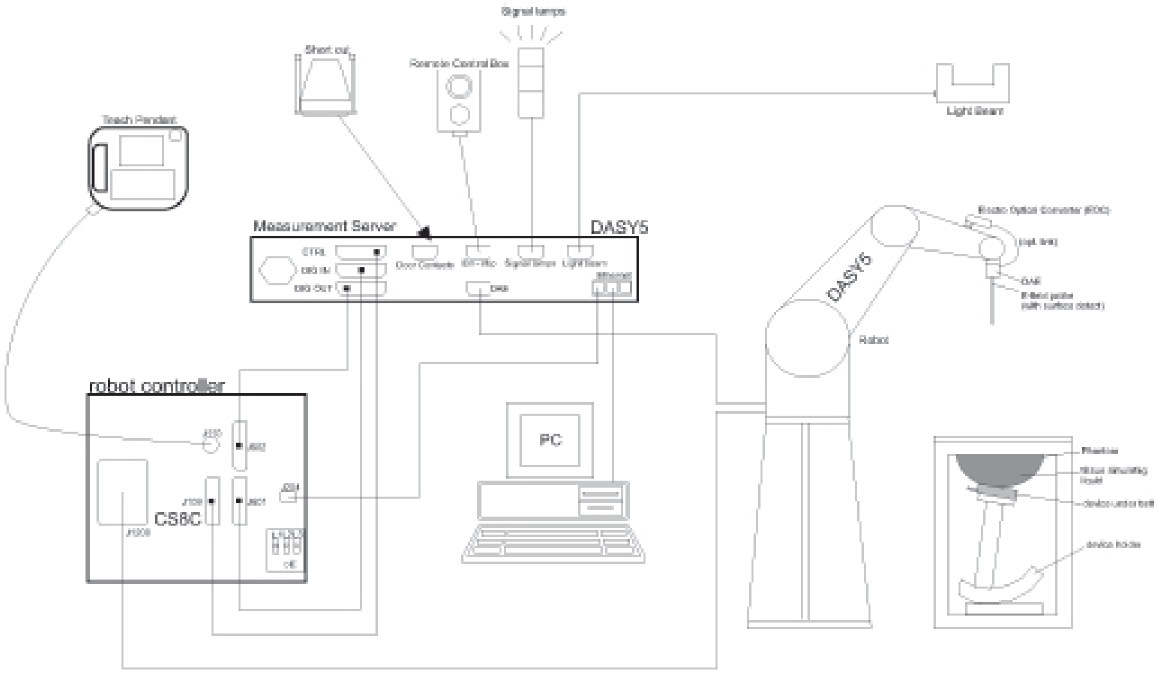
2.1. EUT Description

General Information	
Product Name	Dual Band Digital Two Way Radio
Test Model	VDG-UV008
Hardware Version	LD8800DF697
Software Version	V1.02.03.1007
Exposure Category:	Occupational/Controlled Exposure
Modulation Type	F3E&4FSK
TX Frequency Range	UHF(400MHz~480MHz); VHF(136MHz~174MHz)
Rated Power	5W (It was fixed by the manufacturer, any individual can't arbitrarily change it.)
Max. Output Power	UHF:36.95dBm VHF:36.95dBm
Channel Spacing	12.5 KHz
Antenna Type	Detachable
Antenna Gain	1.5dBi
Body-Worn Accessories:	Belt Clip with headset
Face-Head Accessories:	None
Battery Type (s) Tested:	DC7.4V, 2500mAh (by battery)

Note: 1. The sample used for testing is end product.

3. SAR MEASUREMENT SYSTEM

3.1. The DASY5 system used for performing compliance tests consists of following items



- A standard high precision 6-axis robot with controller, teach pendant and software.
- Data acquisition electronics (DAE) which attached to the robot arm extension. The DAE consist 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 with a 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
- A dosimetric probe equipped with an optical surface detector system.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital Communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- A Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- Phantoms, device holders and other accessories according to the targeted measurement.

3.2. DASY5 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. SPEAG conducts the probe calibration in compliance with international and national standards (e.g. EN62209, etc.)Under ISO17025.The calibration data are in Appendix D.

Isotropic E-Field Probe Specification

Model	ES3DV3-SN:3337	
Manufacture	SPEAG	
frequency	0.15GHz-0.45 GHz Linearity:±0.6%dB(K=2)(0.15MHz-0.45 GHz)	
Dynamic Range	0.01W/kg-100W/kg Linearity:±0.6%dB(K=2)	
Dimensions	Overall length:337mm Tip diameter:4mm Typical distance from probe tip to dipole centers:2mm	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 3 GHz with precision of better 30%.	

3.3. Data Acquisition Electronics description

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

The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

DAE4

Input Impedance	200MOhm	
The Inputs	Symmetrical and floating	
Common mode rejection	above 80 dB	

3.4. Robot

The DASY system uses the high precision robots (DASY5:TX60) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version from is used.
The XL robot series have many features that are important for our application:
- High precision (repeatability 0.02 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)
- 6-axis controller

3.5. Light Beam Unit

The light beam switch allows automatic “tooling” of the probe. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip.
The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned prob.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position. e, the same position will be reached with another aligned probe within 0

3.6. Device Holder

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 (EPR).
Thus the device needs no repositioning when changing the angles.
The DASY device holder has been made out 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.

3.7. Measurement Server

The measurement server is based on a PC/104 CPU board with CPU (DASY5: 400 MHz, Intel Celeron), chip-disk (DASY5: 128MB), RAM (DASY5: 128MB). 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 DAYS 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.

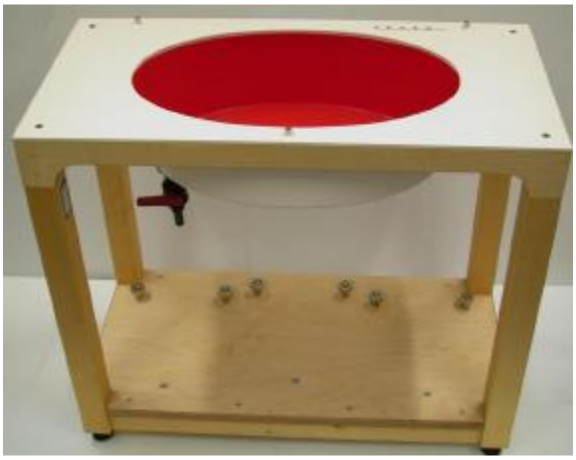
3.8. PHANTOM

SAM Twin Phantom

The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region where shell thickness increases to 6mm). It has three measurement areas: □ Left head □ Right head □ Flat 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

□ Flat phantom a fiberglass shell flat phantom with 2mm+/- 0.2 mm shell thickness. It has only one measurement area for Flat phantom	

4. SAR MEASUREMENT PROCEDURE

4.1. Specific Absorption Rate (SAR)

SAR is related to the rate at which energy is absorbed per unit mass in 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 occupational/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 given mass density (ρ). The equation description is as below:

$$\mathrm{SAR} = \frac{\mathrm{d}}{\mathrm{d}t}\left(\frac{\mathrm{d}W}{\mathrm{d}m}\right) = \frac{\mathrm{d}}{\mathrm{d}t}\left(\frac{\mathrm{d}W}{\rho \mathrm{d}V}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg)
SAR can be obtained using either of the following equations:

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

$$\mathrm{SAR} = c_h \left.\frac{\mathrm{d}T}{\mathrm{d}t}\right|_{t=0}$$

Where

SAR	is the specific absorption rate in watts per kilogram;
E	is the r.m.s. value of the electric field strength in the tissue in volts per meter;
σ	is the conductivity of the tissue in siemens per metre;
ρ	is the density of the tissue in kilograms per cubic metre;
c_h	is the heat capacity of the tissue in joules per kilogram and Kelvin;
$\frac{\mathrm{dT}}{\mathrm{dt}} \mid \mathrm{t} = 0$	is the initial time derivative of temperature in the tissue in kelvins per second

4.2. SAR Measurement Procedure

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurement are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface is 2.7mm This distance cannot be smaller than the distance os sensor calibration points to probe tip as `defined in the probe properties,

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in db) is specified in the standards for compliance testing. For example, a 2db range is required in EN 50360 and EN62209 standards, whereby 3db is a requirement when compliance is assessed in accordance with the ARIB standard (Japan) If one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximum are detected, the number of Zoom Scan has to be increased accordingly.

measure the SAR distribution within the phantom (area scan procedure). The SAR distribution is scanned along the inside surface of one side of the phantom head, at least for an area larger than the projection of the handset and antenna. The spatial grid step shall be less than 20 mm. The resolution accuracy can also be tested using the reference functions of 7.2.4. If surface scanning is used, then the distance between the geometrical centre of the probe dipoles and the inner surface of the phantom shall be 8,0 mm or less (±1,0 mm). At all measurement points, the angle of the probe with respect to the line normal to the surface is recommended but not required to be less than 30°.

Step 3: Zoom Scan

Zoom Scan are used to assess the peak spatial SAR value within a cubic average volume containing 1g and 10g of simulated tissue. The Zoom Scan measures points (refer to table below) within a cube whose 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 1g and 10g and displays these values next to the job's label.

measure SAR with a grid step of 8 mm or less in a volume with a minimum size of 30 mm by 30 mm and 30 mm in depth (zoom scan procedure). The grid step in the vertical direction shall be 5 mm or less (see C.3.3). Separate grids shall be centred on each of the local SAR maxima found in step c).

Step 4: Power Drift Measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the same settings. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

5. TISSUE SIMULATING LIQUID

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15cm. For head SAR testing the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15cm For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15cm.The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5% are listed in 5.2

5.1. The composition of the tissue simulating liquid

Ingredient (% Weight) / Frequency (MHz)	Water	Nacl	Sugar	HEC	Bactericide	DGBE	1,2-Propanediol	Triton X-100
450	38.56	3.95	56.32	0.98	0.19	0.0	0.0	0.0

The 150MHz liquid has been provided by SPEAG and they do not provide the composition as it is a secret issue.

5.2. Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the EN62209-1 have been incorporated in the following table. The body tissue dielectric parameters recommended by the EN62209-2 have been incorporated in the following table.

Target Frequency (MHz)	head		body	
	εr	σ (S/m)	εr	σ (S/m)
150	**52.3**	**0.76**	**52.3**	**0.76**
300	45.3	0.87	45.3	0.87
450	**43.5**	**0.87**	**43.5**	**0.87**
835	41.5	0.90	41.5	0.90
900	41.5	0.97	41.5	0.97
1450	40.5	1.20	40.5	1.20
1800 – 2000	40.0	1.40	40.0	1.40
2450	39.2	1.80	39.2	1.80
3000	38.5	2.40	38.5	2.40

(εr = relative permittivity, σ = conductivity and ρ = 1000 kg/m3)

5.3. Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using DASY5 Dielectric Probe Kit and R&S Network Analyzer ZVL6.

Frequency (MHz)	Target Value		Measurement Value		Tissue Temp [^{o}C]	Test Date
	εr	δ[s/m]	εr	δ[s/m]		
150	52.3 49.685-54.915	0.76 0.722-0.798	53.18	0.74	20.9	Apr. 03, 2023
450	43.50 41.325 - 45.675	0.87 0.8265 - 0.9135	44.93	0.88	21.3	Apr. 04, 2023

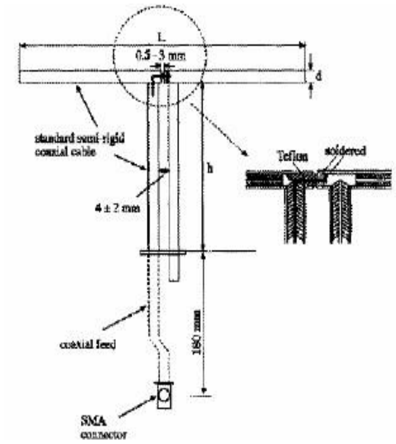
6. SAR SYSTEM CHECK PROCEDURE

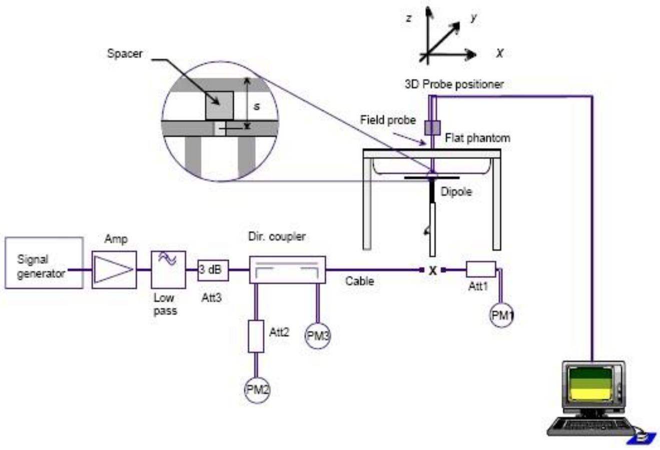
6.1. SAR System Check Procedures

SAR system check is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device. The same SAR probe(s) and tissue-equivalent media combinations used with each specific SAR system for system verification must be used for device testing. When multiple probe calibration points are required to cover substantially large transmission bands, independent system verifications are required for each probe calibration point. A system verification must be performed before each series of SAR measurements using the same probe calibration point and tissue-equivalent medium. Additional system verification should be considered according to the conditions of the tissue-equivalent medium and measured tissue dielectric parameters, typically every three to four days when the liquid parameters are remeasured or sooner when marginal liquid parameters are used at the beginning of a series of measurements.

Each DASY system is equipped with one or more system check kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system check and system validation. System kit includes a dipole, and dipole device holder.

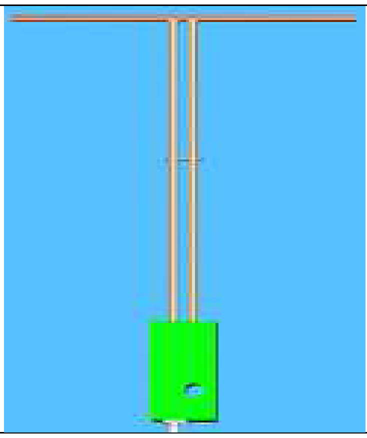
The system check verifies that the system operates within its specifications. It's performed daily or before every SAR measurement. The system check uses normal SAR measurement in the flat section of the phantom with a matched dipole at a specified distance. The system check setup is shown as below.





6.2. SAR System Check

6.2.1. Dipoles

	The dipoles used is based on the EN62209-2 standard, the table below provides details for the mechanical and electrical Specifications for the dipoles.
	The Loop antenna used is based on the EN62209-2 standard, the table below provides details for the mechanical and electrical specifications for the Loop Antenna.

Frequency	R/L (mm)	R/h (mm)	d (mm)
150MHz	222	222	97
450MHz	290	166.7	6.35

6.2.2. System Check Result

System Performance Check at 150MHz &450MHz								
Validation Kit: CLA150 SN:4008& D450V3 SN:1113								
Frequency [MHz]	Target Value(W/kg)		Reference Result (± 10%)		Normalized to 1W(W/kg)		Tissue Temp. [°C]	Test time
	1g	10g	1g	10g	1g	10g		
150	3.96	2.66	3.564-4.356	2.394-2.926	4.06	2.68	20.9	Apr. 03, 2023
450	4.61	3.09	4.149-5.071	2.781-3.399	4.68	3.12	21.3	Apr. 04, 2023

Note:
(1) We use a CW signal of 18dBm(450MHz),23dBm(150MHz) for system check, and then all SAR value are normalized to 1W forward power. The result must be within ±10% of target value.

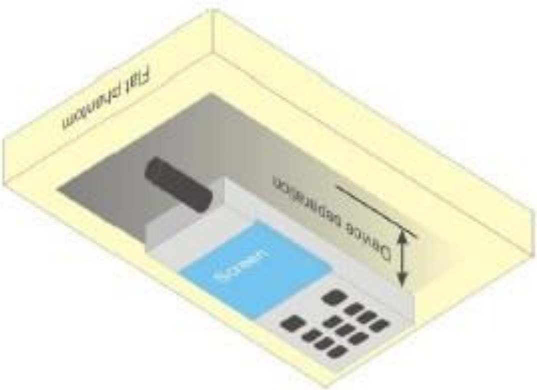
Attestation of Global Compliance(Shenzhen)Co., Ltd
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd
Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: http://www.agccert.com/

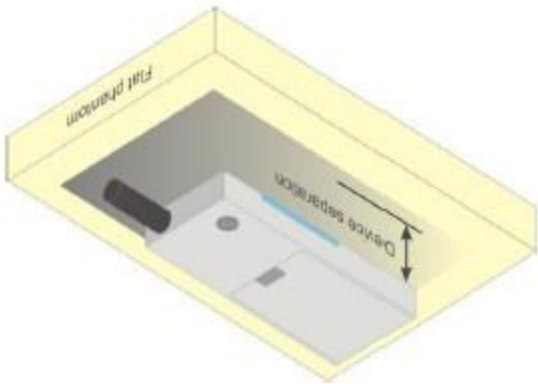
7. EUT TEST POSITION

This EUT was tested in **Front Face, Rear Face, Edge2 and Edge4.**

7.1. Body Worn Position

(1) To position the EUT parallel to the phantom surface.
(2) To adjust the EUT parallel to the flat phantom.
(3) To adjust the distance between the EUT surface and the flat phantom to **25mm** while used in face up, **0mm** while used on body back with all accessories and **0mm** while used on hand.





8. SAR EXPOSURE LIMITS

Limits for Occupational / Controlled Exposure Environment (W/kg)

Type Exposure	Controlled Environment Limit (W/kg)
Spatial Average (averaged over the whole body)	0.4
Spatial Peak (averaged over any 10g of tissue)	10
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	20.0

Note:
These limits are derived from " ICNIRP Guidelines For Limiting Exposure To Time - Varying Electric, Magnetic And Electromagnetic Fields (Up To 300 GHz)"

9. TEST EQUIPMENT LIST

Equipment description	Manufacturer/ Model	Identification No.	Software version	Current calibration date	Next calibration date
Stäubli Robot	Stäubli-TX60	F13/5Q2UD1/A/01	N/A	N/A	N/A
Robot Controller	Stäubli-CS8	139522	N/A	N/A	N/A
E-Field Probe	Speag- ES3DV3	SN:3337	N/A	Sep. 26, 2022	Sep. 25, 2023
ELI4 Phantom	ELI V5.0	1210	N/A	N/A	N/A
Device Holder	Speag-SD 000 H01 KA	SD 000 H01 KA	N/A	N/A	N/A
DAE4	Speag-SD 000 D04 BM	1398	N/A	May 17,2022	May 16,2023
SAR Software	Speag-DASY5	N/A	5.3da53	N/A	N/A
Liquid	SATIMO	N/A	N/A	N/A	N/A
Loop Antenna	Speag-CLA150	SN:4008	N/A	Mar. 21,2023	Mar. 20,2026
Dipole	Speag-D450V3	SN:1113	N/A	Feb. 05,2021	Feb. 04,2024
Signal Generator	Agilent-E4438C	US41461365	V5.03	Aug. 03,2022	Aug. 02,2023
EXA Signal Analyzer	Agilent / N9010A	MY53470504	N/A	Aug. 04,2022	Aug. 03,2023
Network Analyzer	Rhode & Schwarz ZVL6	N/A	3.2	Oct. 17, 2022	Oct. 16, 2023
Attenuator	Warison /WATT-6SR1211	S/N:WRJ34AYM2F1	N/A	Jun. 08, 2022	Jun. 07, 2023
Amplifier	AS0104-55_55	1004793	N/A	Jun. 09, 2022	Jun. 08, 2023
Directional Couple	Werlatone/ C5571-10	SN99463	N/A	Mar. 10, 2022	Mar. 09, 2024
Power Sensor	NRP-Z21	1137.6000.02	N/A	Sep. 06,2022	Sep. 05,2023
Power Sensor	NRP-Z23	100323	N/A	Feb. 15,2023	Feb. 14,2024
Power Viewer	R&S	V2.3.1.0	N/A	N/A	N/A
Calibration standard parts for network sub - port	R&S/ ZV-Z132	N/A	V2.3.1.0	Nov. 15,2022	Nov. 14,2023

Note: Per EN62209-2 Dipole SAR Validation, AGC Lab has adopted 3 years calibration intervals. On annual basis, every measurement dipole has been evaluated and is in compliance with the following criteria:
1. There is no physical damage on the dipole;
2. System validation with specific dipole is within 10% of calibrated value;
3. Return-loss is within 20% of calibrated measurement;
4. Impedance is within 5Ω of calibrated measurement.

10. MEASUREMENT UNCERTAINTY

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly by the statistical analysis of a series of observations is termed a Type An evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in Table as follow.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor(a)	1/k(b)	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

(a) Standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) κ is the coverage factor

Table 13.1 Standard Uncertainty for Assumed Distribution (above table)

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

DASY Uncertainty- ES3DV3 Measurement uncertainty for DUT averaged over 1 gram / 10 gram.									
Uncertainty Component	Sec.	Tol (± %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (±%)	10g Ui (±%)	vi
Measurement System									
Probe calibration	Annex B	6.65	N	1	1	1	6.65	6.65	∞
Axial Isotropy	7.2.2.2	0.25	R	$\sqrt{3}$	√0.5	√0.5	0.10	0.10	∞
Hemispherical Isotropy	7.2.2.2	1.30	R	$\sqrt{3}$	√0.5	√0.5	0.53	0.53	∞
Boundary effect	7.2.2.5	1.00	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	7.2.2.3	0.30	R	$\sqrt{3}$	1	1	0.17	0.17	∞
System detection limits	7.2.2.3	1.00	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	7.2.2.4	3.30	R	$\sqrt{3}$	1	1	1.91	1.91	∞
Readout Electronics	7.2.2.6	0.15	N	1	1	1	0.15	0.15	∞
Response Time	7.2.2.7	0.00	R	$\sqrt{3}$	1	1	0.00	0.00	∞
Integration Time	7.2.2.8	1.70	R	$\sqrt{3}$	1	1	0.98	0.98	∞
RF ambient conditions-Noise	7.2.9	3.00	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient conditions-reflections	7.2.9	3.00	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner mechanical tolerance	7.2.3.1	0.40	R	$\sqrt{3}$	1	1	0.23	0.23	∞
Probe positioning with respect to phantom shell	7.2.3.2	6.70	R	$\sqrt{3}$	1	1	3.87	3.87	∞
Post-processing	7.2.10	4.00	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Test sample Related									
Test sample positioning	7.2.5.3	2.90	N	1	1	1	2.90	2.90	∞
Device holder uncertainty	7.2.5.2	3.60	N	1	1	1	3.60	3.60	∞
SAR drift measurement	7.2.8	5.00	R	$\sqrt{3}$	1	1	2.89	2.89	∞
SAR scaling	7.2.11	5.00	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Phantom and set-up									
Phantom uncertainty (shape and thickness uncertainty)	7.2.4	6.60	R	$\sqrt{3}$	1	1	3.81	3.81	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	7.2.7.2	1.90	N	1	1	0.84	1.90	1.60	∞
Liquid conductivity (temperature uncertainty)	7.2.6.6 7.2.6.5	2.50	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid conductivity (measured)	7.2.6.3 7.2.6.5	4.00	N	1	0.78	0.71	3.12	2.84	M
Liquid permittivity (temperature uncertainty)	7.2.6.6 7.2.6.5	2.50	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	∞
Liquid permittivity (measured)	7.2.6.4 7.2.6.5	5.00	N	1	0.23	0.26	1.15	1.30	M
Combined Standard Uncertainty			RSS				11.79	11.62	
Expanded Uncertainty (95% Confidence interval)			K=2				23.58	23.25	

DASY Uncertainty- ES3DV3 System validation uncertainty for Dipole averaged over 1 gram / 10 gram.									
Uncertainty Component	Sec.	Tol (±%)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (±%)	10g Ui (±%)	vi
Measurement System									
Probe calibration	Annex B	6.65	N	1	1	1	6.65	6.65	∞
Axial Isotropy	7.2.2.2	0.25	R	$\sqrt{3}$	1	1	0.14	0.14	∞
Hemispherical Isotropy	7.2.2.2	1.30	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Boundary effect	7.2.2.5	1.00	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	7.2.2.3	0.30	R	$\sqrt{3}$	1	1	0.17	0.17	∞
System detection limits	7.2.2.3	1.00	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	7.2.2.4	3.30	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Readout Electronics	7.2.2.6	0.15	N	1	1	1	0.15	0.15	∞
Response Time	7.2.2.7	0.00	R	1	0	0	0.00	0.00	∞
Integration Time	7.2.2.8	1.70	R	$\sqrt{3}$	0	0	0.00	0.00	∞
RF ambient conditions-Noise	7.2.9	3.00	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient conditions-reflections	7.2.9	3.00	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner mechanical tolerance	7.2.3.1	0.40	R	$\sqrt{3}$	1	1	0.23	0.23	∞
Probe positioning with respect to phantom shell	7.2.3.2	6.70	R	$\sqrt{3}$	1	1	3.87	3.87	∞
Post-processing	7.2.10	4.00	R	$\sqrt{3}$	1	1	2.31	2.31	∞
System validation source									
Deviation of experimental dipole from numerical dipole	7.2.12	5.00	N	1	1	1	5.00	5.00	∞
Input power and SAR drift measurement	7.2.8	5.00	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Other source contribution Uncertainty	7.2.13	2.00	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Phantom and set-up									
Phantom uncertainty (shape and thickness uncertainty)	7.2.4	6.60	R	$\sqrt{3}$	1	1	3.81	3.81	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	7.2.7.2	1.90	N	1	1	0.84	1.90	1.60	∞
Liquid conductivity (temperature uncertainty)	7.2.6.6 7.2.6.5	2.50	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid conductivity (measured)	7.2.6.3 7.2.6.5	4.00	N	1	0.78	0.71	3.12	2.84	M
Liquid permittivity (temperature uncertainty)	7.2.6.6 7.2.6.5	2.50	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	∞
Liquid permittivity (measured)	7.2.6.4 7.2.6.5	5.00	N	1	0.23	0.26	1.15	1.30	M
Combined Standard Uncertainty			RSS				11.44	11.27	
Expanded Uncertainty (95% Confidence interval)			K=2				22.88	22.54	

DASY Uncertainty- ES3DV3 System Check uncertainty for Dipole averaged over 1 gram / 10 gram.									
Uncertainty Component	Sec.	Tol (± %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (±%)	10g Ui (±%)	vi
Measurement System									
Probe calibration drift	Table 13 note a	0.50	N	1	1	1	0.50	0.50	∞
Axial Isotropy	7.2.2.2	0.25	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Hemispherical Isotropy	7.2.2.2	1.30	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Boundary effect	7.2.2.5	1.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Linearity	7.2.2.3	0.3	R	$\sqrt{3}$	0	0	0.00	0.00	∞
System detection limits	7.2.2.3	0.30	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Modulation response	7.2.2.4	1.00	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Readout Electronics	7.2.2.6	3.30	N	1	0	0	0.00	0.00	∞
Response Time	7.2.2.7	0.15	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Integration Time	7.2.2.8	0.00	R	$\sqrt{3}$	0	0	0.00	0.00	∞
RF ambient conditions-Noise	7.2.9	1.70	R	$\sqrt{3}$	0	0	0.00	0.00	∞
RF ambient conditions-reflections	7.2.9	3.00	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Probe positioner mechanical tolerance	7.2.3.1	3.00	R	$\sqrt{3}$	1	1	0.23	0.23	∞
Probe positioning with respect to phantom shell	7.2.3.2	0.40	R	$\sqrt{3}$	1	1	3.87	3.87	∞
Post-processing	7.2.10	6.70	R	$\sqrt{3}$	0	0	0.00	0.00	∞
System check source									
Deviation between experimental dipoles	7.2.12	2.00	N	1	1	1	2.00	2.00	∞
Input power and SAR drift measurement	7.2.8	5.00	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Other source contribution Uncertainty	7.2.13	2.00	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Phantom and set-up									
Phantom uncertainty (shape and thickness uncertainty)	7.2.4	6.60	R	$\sqrt{3}$	1	1	3.81	3.81	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	7.2.7.2	1.90	N	1	1	0.84	1.90	1.60	∞
Liquid conductivity (temperature uncertainty)	7.2.6.6 7.2.6.5	2.50	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid conductivity (measured)	7.2.6.3 7.2.6.5	4.00	N	1	0.78	0.71	3.12	2.84	M
Liquid permittivity (temperature uncertainty)	7.2.6.6 7.2.6.5	2.50	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	∞
Liquid permittivity (measured)	7.2.6.4 7.2.6.5	5.00	N	1	0.23	0.26	1.15	1.30	M
Combined Standard Uncertainty			RSS				9.89	9.69	
Expanded Uncertainty (95% Confidence interval)			K=2				19.78	19.38	

11. POWER MEASUREMENT

UHF:

Frequency (MHz)	Channel Spacing	Max. Output Power (dBm)
Analog		
5W		
400.025	12.5KHz	36.56
420.025		36.60
440.025		36.58
460.025		**36.73**
479.975		36.55
Digital		
5W		
400.025	12.5KHz	36.83
420.025		36.91
440.025		**36.95**
460.025		36.88
479.975		36.92

VHF:

Frequency (MHz)	Channel Spacing	Max. Output Power (dBm)
Analog		
5W		
136.025	12.5KHz	36.79
142.350		36.65
148.675		36.77
155.000		**36.92**
161.325		36.82
167.650		36.76
173.975		36.59
Digital		
5W		
136.025	12.5KHz	36.91
142.350		36.90
148.675		36.79
155.000		**36.95**
161.325		36.82
167.650		36.86
173.975		36.92

12. TEST RESULTS

12.1. SAR Test Results Summary

12.1.1. Test position and configuration

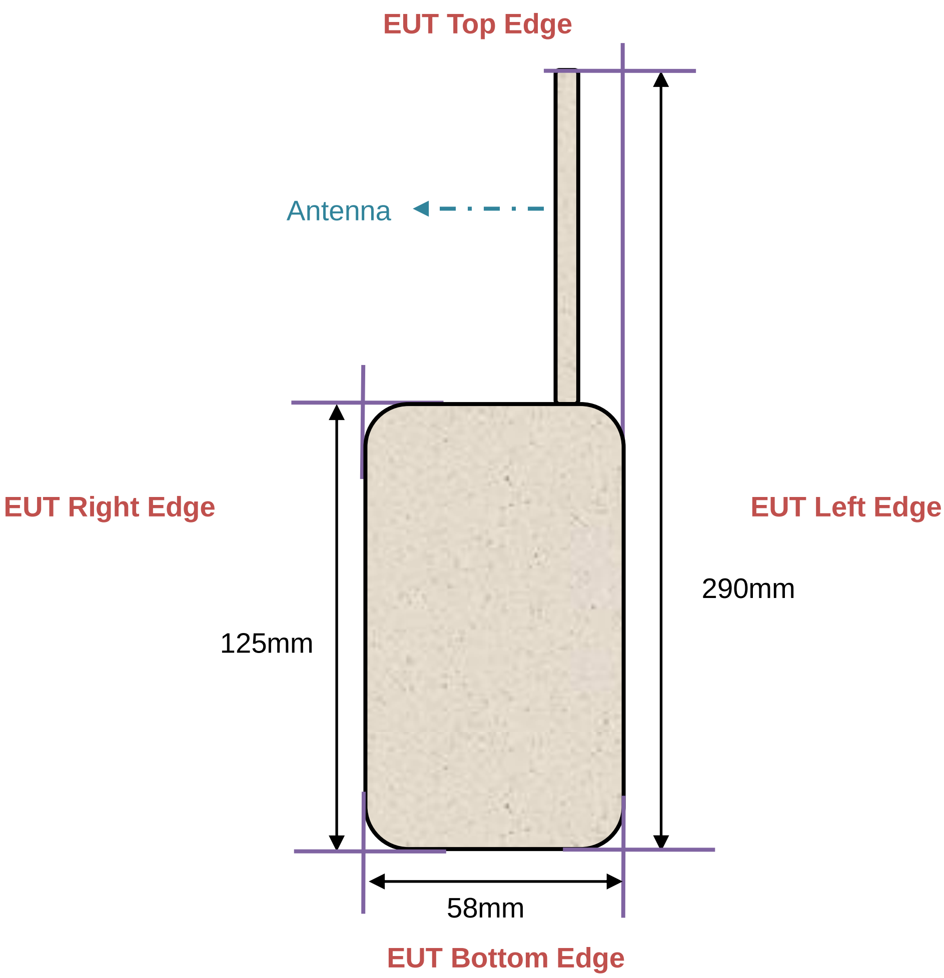
Face up SAR was performed with the Face up of the device positioned at 25mm from the flat phantom, Body back SAR was performed with the device configured with all accessories close to the Flat Phantom and Hand SAR was performed with the device 0mm from the phantom according to TGN 20.

12.1.2. Operation Mode

Set the EUT to maximum output power level and transmit on lower, middle and top channel with 100% duty cycle individually during SAR measurement.

The EUT only contains the Testing antenna, Standard battery and default body-worn accessory specified by customer. The earphone is only for testing

12.1.3. Antenna Location: (back view)



12.1.4. SAR Test Results Summary

UHF:

SAR MEASUREMENT									
Depth of Liquid (cm):>15					Relative Humidity (%): 56.4				
Product: Two-way Radio									
Test Mode: Face up, body back with all accessories and handheld									
Position	**Freq. (MHz)**	**Separation (KHz)**	**Power Drift (± 0.2dB)**	**SAR 10g with 100% duty Cycle (W/kg)**	**SAR 10g with 50% duty cycle (W/kg)**	**Max. Tune-up Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/kg)**	**Limit W/kg**
Analog-Hold to Face with 2.5 cm separation									
Face Up	440.025	12.5	-0.17	**5.54**	2.77	36.99	36.58	**3.166**	10.0
Analog- 0mm body back touch with accessories									
Back Touch+ Belt Clip+ Headset	440.025	12.5	-0.07	**8.34**	4.17	36.99	36.58	**4.657**	10.0
Analog-Handheld with 0 mm separation.									
Back	440.025	12.5	-0.14	12.6	6.3	36.99	36.58	7.151	20.0
Front	440.025		-0.64	11.1	5.55	36.99	36.58	7.068	20.0
Edge2(Right)	440.025		-0.42	10.9	5.45	36.99	36.58	6.598	20.0
Edge4(Left)	400.025		-0.25	11.5	5.75	36.99	36.56	6.725	20.0
Edge4(Left)	440.025		-0.25	**13**	6.5	36.99	36.58	**7.567**	20.0
Edge4(Left)	479.975		-0.24	12.5	6.25	36.99	36.55	7.309	20.0
Digital-Hold to Face with 2.5 cm separation									
Face Up	440.025	12.5	0.01	**0.998**	0.499	36.99	36.95	**0.505**	10.0
Digital - 0mm body back touch with accessories									
Back Touch+ Belt Clip+ Headset	440.025	12.5	-0.24	**1.59**	0.795	36.99	36.95	**0.848**	10.0
Digital -Handheld with 0 mm separation.									
Back	440.025	12.5	-0.28	2.81	1.405	36.99	36.95	1.512	20.0
Front	440.025		-0.15	2.25	1.125	36.99	36.95	1.175	20.0
Edge2(Right)	440.025		-0.41	2.12	1.06	36.99	36.95	1.176	20.0
Edge4(Left)	400.025		-0.11	**5.25**	2.625	36.99	36.83	**2.793**	20.0
Edge4(Left)	440.025		-0.27	3.02	1.51	36.99	36.95	1.622	20.0
Edge4(Left)	479.975		-0.37	2.62	1.31	36.99	36.92	1.450	20.0

Note:

1. During the test, EUT power is 5W with 100% duty cycle
2. $Max\_Scaled = SAR\_meas * 10^{\frac{|Drift|}{10}} * \frac{P\_max}{P\_int} * DC$

   P_ max = Maximum Power(W)
   P_ int = Initial Power(W)
   Drift = DASY drift results(dB)
   SAR_ meas=Measured 10-g or 1-g Avg.SAR(W/kg)
   DC = Transmission mode duty cycle in % where applicable 50% duty cycle is applied for PTT operation.
   For conservative results, the following are applied:
   If P_ int > P_ max, then P_ max/P_ int =1. Drift = 1 for positive drift

VHF:

SAR MEASUREMENT									
Depth of Liquid (cm):>15				Relative Humidity (%): 52.3					
Product: Dual Band Digital Two Way Radio									
Test Mode: Face up, body back with all accessories and handheld									
Position	**Freq. (MHz)**	**Separation (KHz)**	**Power Drift (± 0.2dB)**	**SAR 10g with 100% duty Cycle (W/kg)**	**SAR 10g with 50% duty cycle (W/kg)**	**Max. Turn-up Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/kg)**	**Limit W/kg**
Analog-Hold to Face with 2.5 cm separation									
Face Up	155.000	12.5	-0.34	**0.243**	0.1215	36.99	36.92	**0.134**	10.0
Analog- 0mm body back touch with accessories									
Back Touch+ Belt Clip	155.000	12.5	-0.16	**0.387**	0.1935	36.99	36.92	**0.204**	10.0
Analog-Handheld with 0 mm separation.									
Back	155.000	12.5	-0.01	0.760	0.38	36.99	36.92	0.387	20.0
Front	155.000		-0.42	0.704	0.352	36.99	36.92	0.394	20.0
Edge2(Right)	136.025		-0.85	**4.81**	2.405	36.99	36.79	**3.063**	20.0
Edge2(Right)	155.000		-0.25	2.58	1.29	36.99	36.92	1.389	20.0
Edge2(Right)	173.975		-0.27	2.92	1.46	36.99	36.59	1.704	20.0
Edge4(Left)	155.000		-0.39	0.816	0.408	36.99	36.92	0.454	20.0
Digital-Hold to Face with 2.5 cm separation									
Face Up	155.000	12.5	-0.08	**0.181**	0.0905	36.99	36.95	**0.093**	10.0
Digital - 0mm body back touch with accessories									
Back Touch+ Belt Clip	155.000	12.5	-0.30	**0.275**	0.1375	36.99	36.95	**0.149**	10.0
Digital -Handheld with 0 mm separation.									
Back	155.000	12.5	0.12	0.381	0.1905	36.99	36.95	0.198	20.0
Front	155.000		-0.22	0.434	0.217	36.99	36.95	0.230	20.0
Edge2(Right)	136.025		0.01	1.45	0.725	36.99	36.91	0.740	20.0
Edge2(Right)	155.000		-0.03	1.29	0.645	36.99	36.95	0.655	20.0
Edge2(Right)	173.975		-0.45	**1.53**	0.765	36.99	36.92	**0.862**	20.0
Edge4(Left)	155.000		-0.20	0.462	0.231	36.99	36.95	0.244	20.0

Note:

1. During the test, EUT power is 5W with 100% duty cycle
2. $$Max\_Scaled = SAR\_meas * 10^{\frac{|Drift|}{10}} * \frac{P\_max}{P\_int} * DC$$

   P_ max = Maximum Power(W)
   P_ int = Initial Power(W)
   Drift = DASY drift results(dB)
   SAR_ meas=Measured 10-g or 1-g Avg.SAR(W/kg)
   DC = Transmission mode duty cycle in % where applicable 50% duty cycle is applied for PTT operation.
   For conservative results, the following are applied:
   If P_ int > P_ max, then P_ max/P_ int =1. Drift = 1 for positive drift

APPENDIX A. SAR SYSTEM CHECK DATA

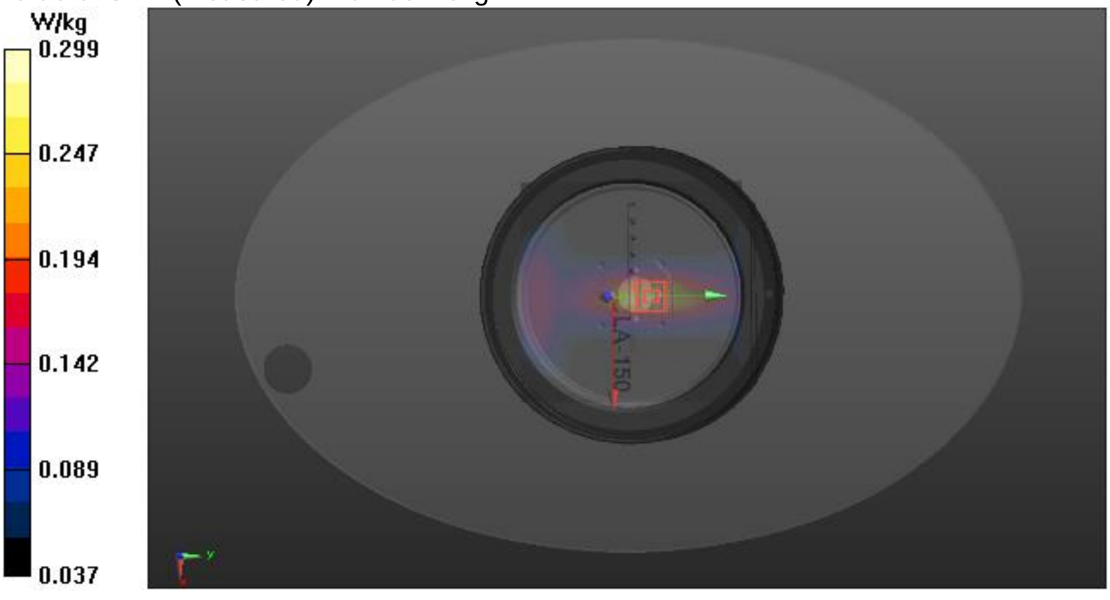
Test Laboratory: AGC Lab **Test date: Apr. 03, 2023**
System Check 150MHz
DUT: Dipole 150 MHz Type: SID 150
Communication System: CW; Communication System Band: D150 (150.0 MHz); Duty Cycle: 1:1;
Frequency: 150MHz; Medium parameters used: f = 150MHz; σ= 0.74 mho/m; εr =53.18 ; ρ = 1000 kg/m³ ;
Phantom Type: Elliptical Phantom; Input Power=18dBm
Ambient temperature (℃): 21.2, Liquid temperature (℃): 20.9

DASY Configuration:

- Probe: ES3DV3 – SN3337; ConvF(8.03, 8.03, 8.03); Calibrated: Sep. 26, 2022;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/System Check 150 MHz Head /Area Scan (12x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.283 W/kg

Configuration/System Check 150MHz Head /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.882 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.431 W/kg
SAR(1 g) = 0.256 W/kg; SAR(10 g) = 0.169 W/kg
Maximum value of SAR (measured) = 0.299 W/kg



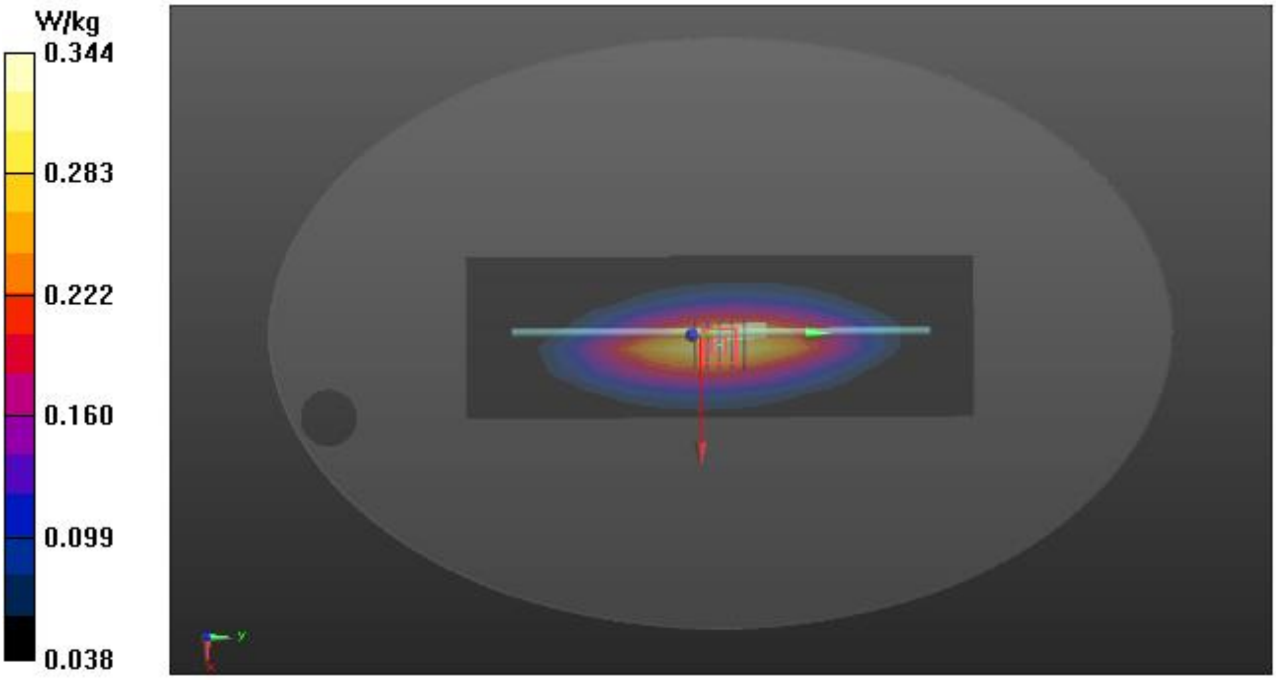
Test Laboratory: AGC Lab **Test date: Apr. 04, 2023**
System Check 450MHz
DUT: Dipole 450 MHz Type: D450V3
Communication System: CW; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1;
Frequency: 450MHz; Medium parameters used: f = 450MHz; σ= 0.88 mho/m; εr =44.93 ; ρ = 1000 kg/m³ ;
Phantom Type: Elliptical Phantom; Input Power=18dBm
Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.3

DASY Configuration:

- Probe: ES3DV3 – SN3337; ConvF(7.23, 7.23, 7.23); Calibrated: Sep. 26, 2022;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/System Check 450MHz Head /Area Scan (8x23x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.341 W/kg

Configuration/System Check 450MHz Head /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.125 V/m; Power Drift = -0.23 dB
Peak SAR (extrapolated) = 0.464 W/kg
SAR(1 g) = 0.295 W/kg; SAR(10 g) = 0.197 W/kg
Maximum value of SAR (measured) = 0.344 W/kg



APPENDIX B. SAR MEASUREMENT DATA

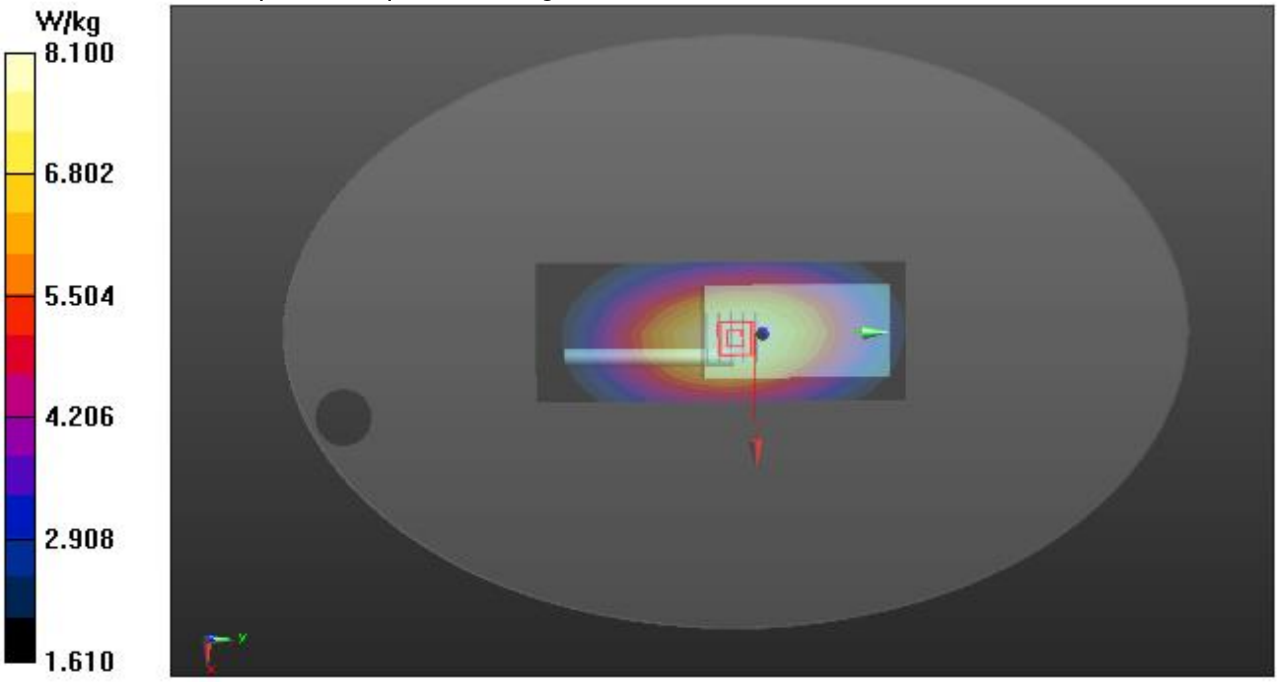
UHF: Analog
Test Laboratory: AGC Lab **Date: Apr. 04, 2023**
Mid- Face up 25mm (12.5 KHz)
DUT: Dual Band Digital Two Way Radio; Type: VDG-UV008

Communication System: 450; Communication System Band: CW 450 MHz; Duty Cycle: 1:1;
Frequency:440.025 MHz; Medium parameters used: f = 450MHz; σ= 0.88 mho/m; εr =44.93; ρ= 1000 kg/m³ ;
Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.3

DASY Configuration:

- Probe: ES3DV3 – SN3337; ConvF(7.23, 7.23, 7.23); Calibrated: Sep. 26, 2022;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

BODY/A-12.5K-FACE UP-25MM/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 8.12 W/kg
BODY/A-12.5K-FACE UP-25MM/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 100.5 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 10.1 W/kg
SAR(1 g) = 7.29 W/kg; SAR(10 g) = 5.54 W/kg
Maximum value of SAR (measured) = 8.10 W/kg



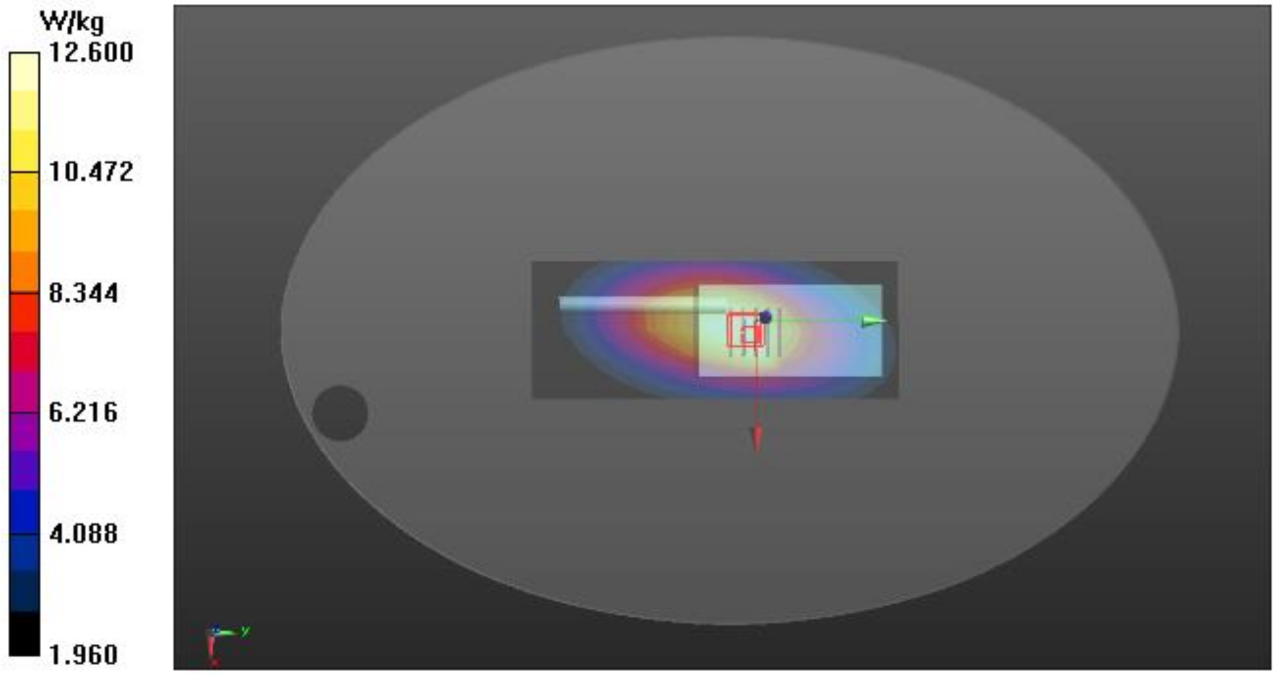
Test Laboratory: AGC Lab **Date: Apr. 04, 2023**
Mid -Body- Back with all accessories 0mm (12.5 KHz)
DUT: Dual Band Digital Two Way Radio; Type: VDG-UV008

Communication System: 450; Communication System Band: CW 450 MHz; Duty Cycle: 1:1;
Frequency:440.025 MHz; Medium parameters used: f = 450 MHz; σ= 0.88 mho/m; εr =44.93; ρ= 1000 kg/m ;
Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.3

DASY Configuration:

- Probe: ES3DV3 – SN3337; ConvF(7.23, 7.23, 7.23); Calibrated: Sep. 26, 2022;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

BODY/A-12.5K-BACK+CLIP-0MM/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 12.7 W/kg
BODY/A-12.5K-BACK+CLIP-0MM/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 124.2 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 16.7 W/kg
SAR(1 g) = 11.3 W/kg; SAR(10 g) = 8.34 W/kg
Maximum value of SAR (measured) = 12.6 W/kg



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Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd
Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: http://www.agccert.com/

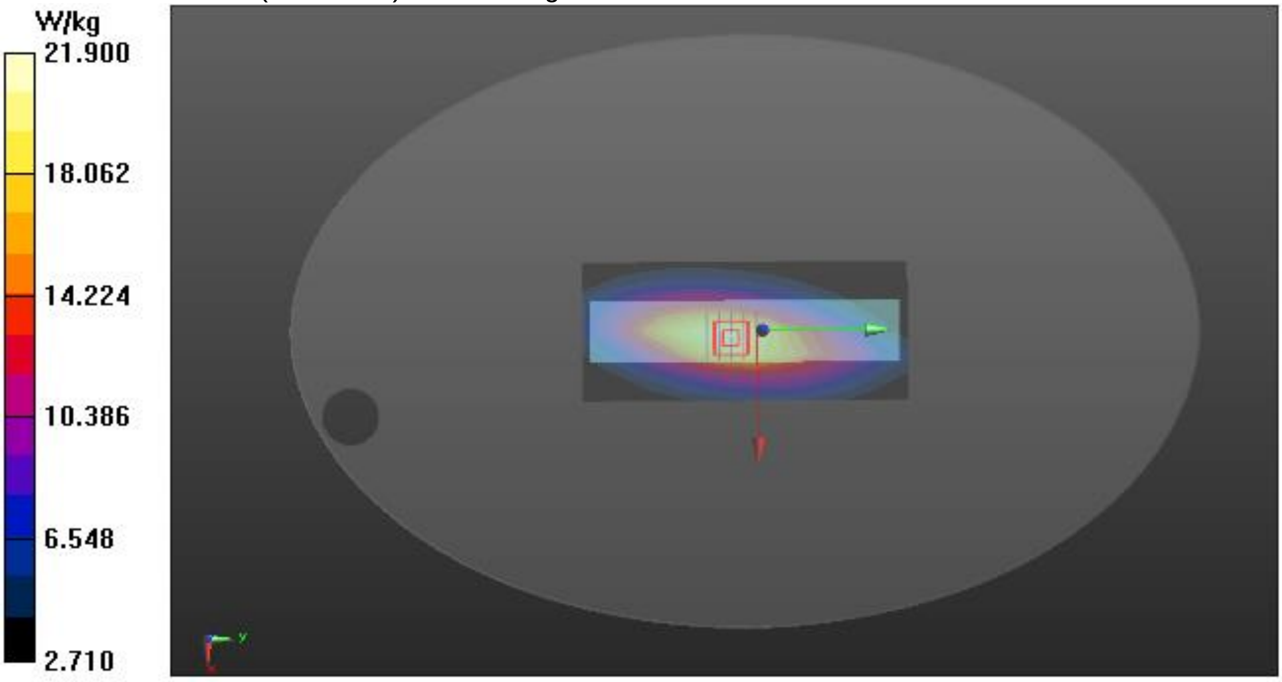
Test Laboratory: AGC Lab **Date: Apr. 04, 2023**
Mid- Hand- Edge4(Left) 0mm (12.5 KHz)
DUT: Dual Band Digital Two Way Radio; Type: VDG-UV008

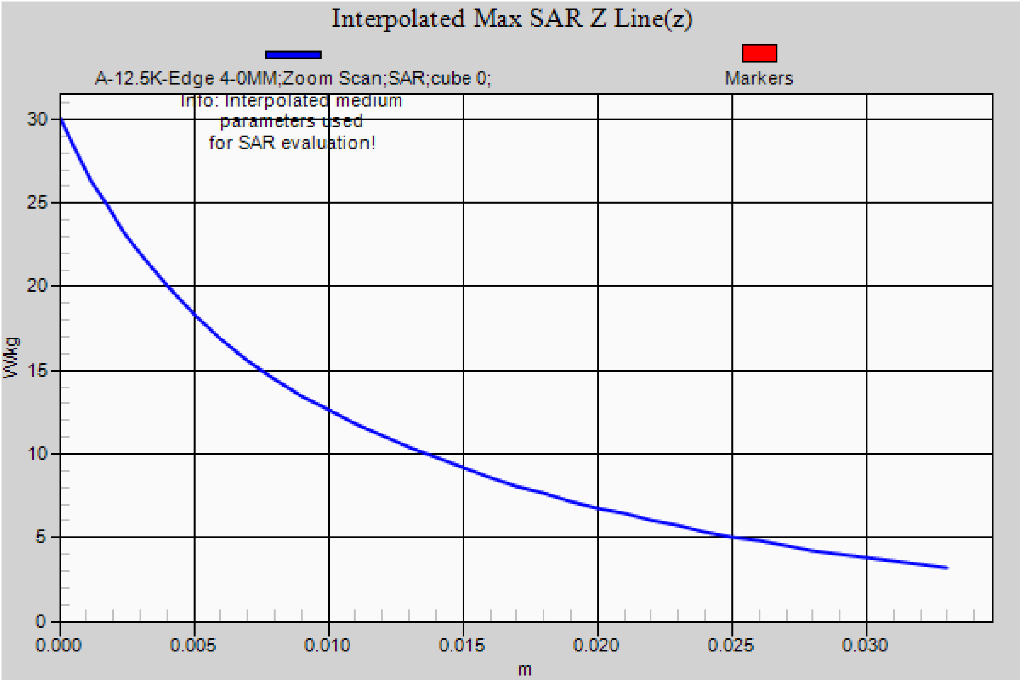
Communication System: 450; Communication System Band: CW 450 MHz; Duty Cycle: 1:1;
Frequency: 440.025 MHz; Medium parameters used: f = 450MHz; σ= 0.88 mho/m; εr =44.93; ρ= 1000 kg/m³ ;
Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.3

DASY Configuration:

- Probe: ES3DV3 – SN3337; ConvF(7.23, 7.23, 7.23); Calibrated: Sep. 26, 2022;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

BODY/A-12.5K-Edge 4-0MM/Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 21.6 W/kg
BODY/A-12.5K-Edge 4-0MM/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 159.3 V/m; Power Drift = -0.25 dB
Peak SAR (extrapolated) = 30.1 W/kg
SAR(1 g) = 19 W/kg; SAR(10 g) = 13 W/kg
Maximum value of SAR (measured) = 21.9 W/kg




Interpolated Max SAR Z Line(z)
A-12.5K-Edge 4-0MM;Zoom Scan;SAR;cube 0;
Markers
Info: Interpolated medium parameters used for SAR evaluation!
W/kg
30
25
20
15
10
5
0
0.000
0.005
0.010
0.015
0.020
0.025
0.030
m

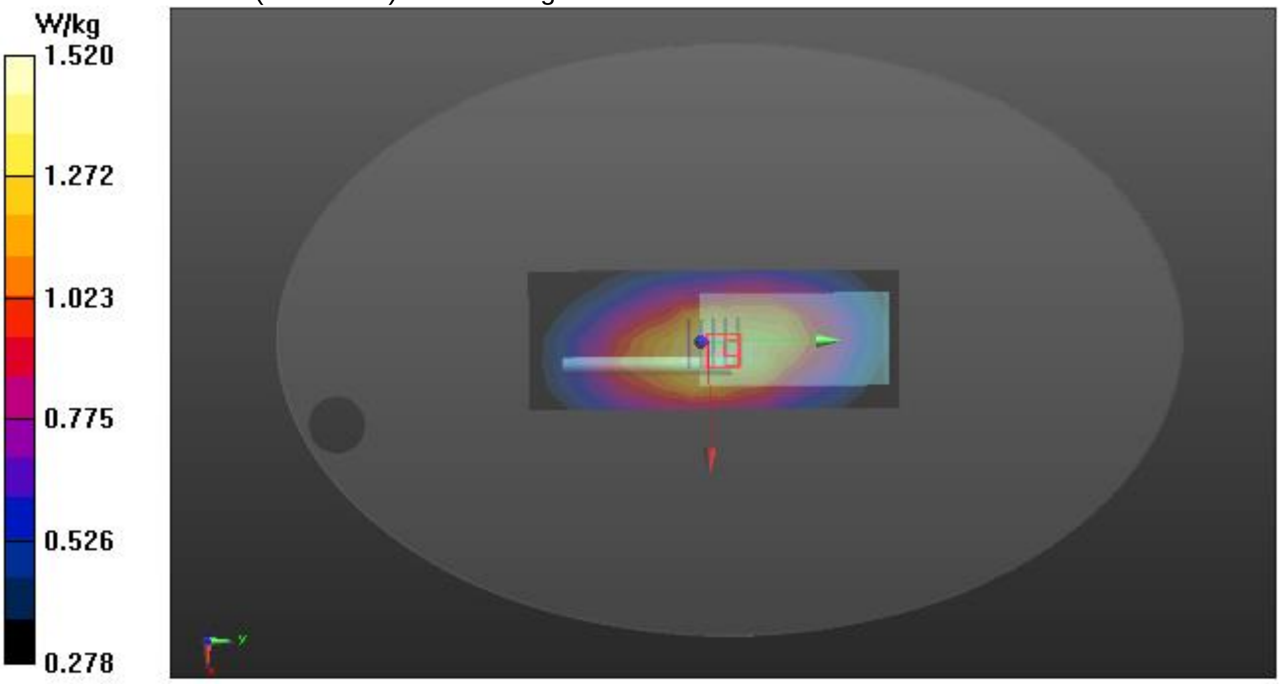
UHF: Digital
Test Laboratory: AGC Lab **Date: Apr. 04, 2023**
Mid- Face up 25mm (12.5 KHz)
DUT: Dual Band Digital Two Way Radio; Type: VDG-UV008

Communication System: 450; Communication System Band: CW 450 MHz; Duty Cycle: 1:1;
Frequency:440.025 MHz; Medium parameters used: f = 450MHz; σ= 0.88 mho/m; εr =44.93; ρ= 1000 kg/m³ ;
Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.3

DASY Configuration:

- Probe: ES3DV3 – SN3337; ConvF(7.23, 7.23, 7.23); Calibrated: Sep. 26, 2022;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

BODY/D-12.5K-FACE UP-25MM/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.50 W/kg
BODY/D-12.5K-FACE UP-25MM/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 42.525 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.92 W/kg
SAR(1 g) = 1.35 W/kg; SAR(10 g) = 0.998 W/kg
Maximum value of SAR (measured) = 1.52 W/kg



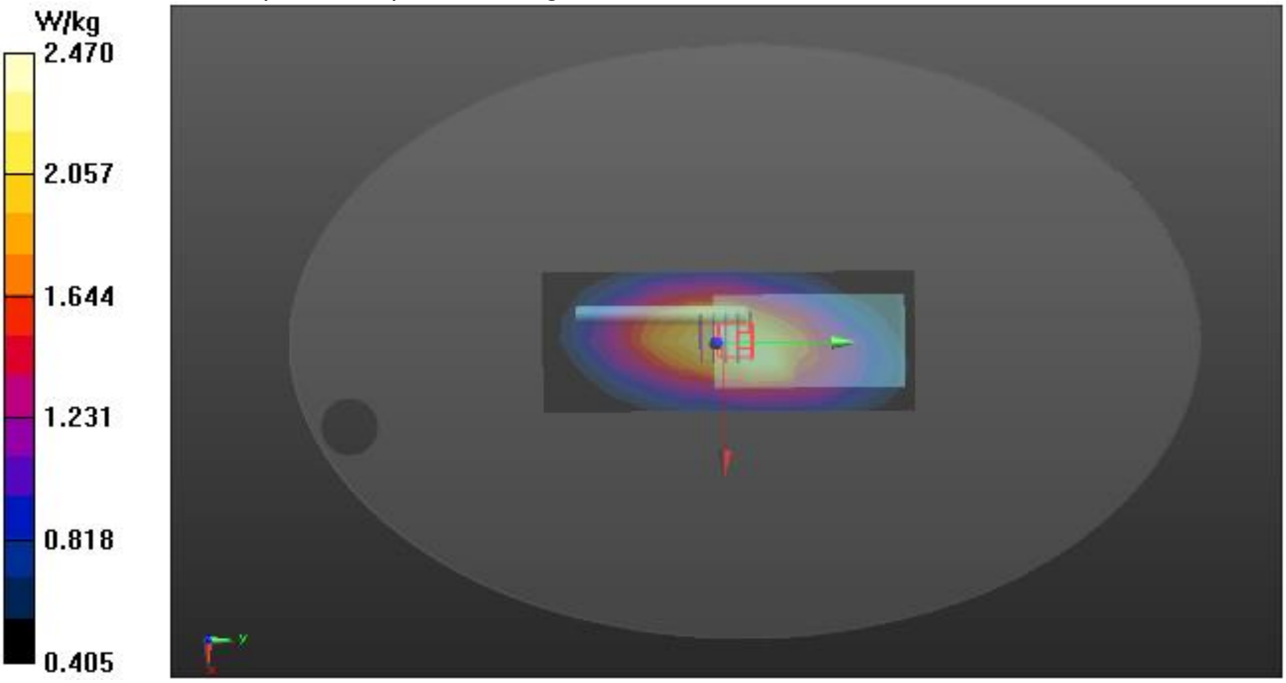
Test Laboratory: AGC Lab **Date: Apr. 04, 2023**
Mid -Body- Back with all accessories 0mm (12.5 KHz)
DUT: Dual Band Digital Two Way Radio; Type: VDG-UV008

Communication System: 450; Communication System Band: CW 450 MHz; Duty Cycle: 1:1;
Frequency:440.025 MHz; Medium parameters used: f = 450 MHz; σ= 0.88 mho/m; εr =44.93; ρ= 1000 kg/m ;
Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.3

DASY Configuration:

- Probe: ES3DV3 – SN3337; ConvF(7.23, 7.23, 7.23); Calibrated: Sep. 26, 2022;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

BODY/D-12.5K-BACK+CLIP-0MM/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.53 W/kg
BODY/D-12.5K-BACK+CLIP-0MM/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 54.039 V/m; Power Drift = -0.24 dB
Peak SAR (extrapolated) = 3.06 W/kg
SAR(1 g) = 2.16 W/kg; SAR(10 g) = 1.59 W/kg
Maximum value of SAR (measured) = 2.47 W/kg



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Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd
Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: http://www.agccert.com/

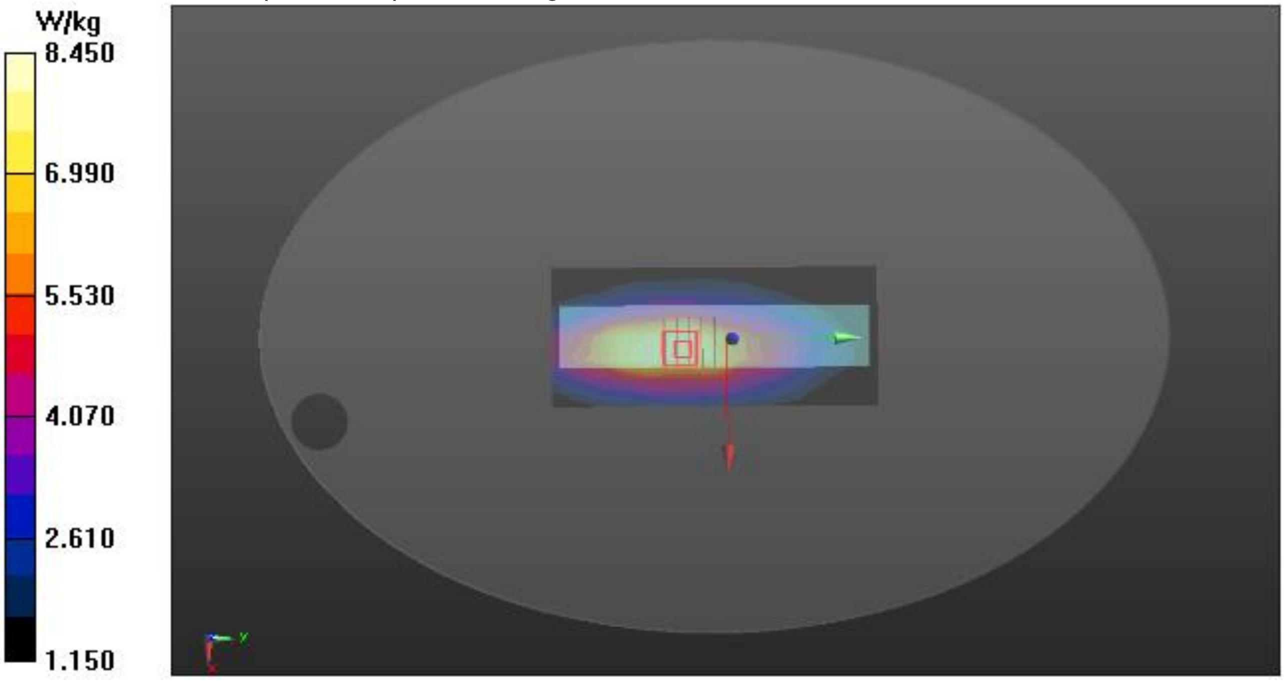
Test Laboratory: AGC Lab **Date: Apr. 04, 2023**
Low- Hand- Edge4(Left) 0mm (12.5 KHz)
DUT: Dual Band Digital Two Way Radio; Type: VDG-UV008

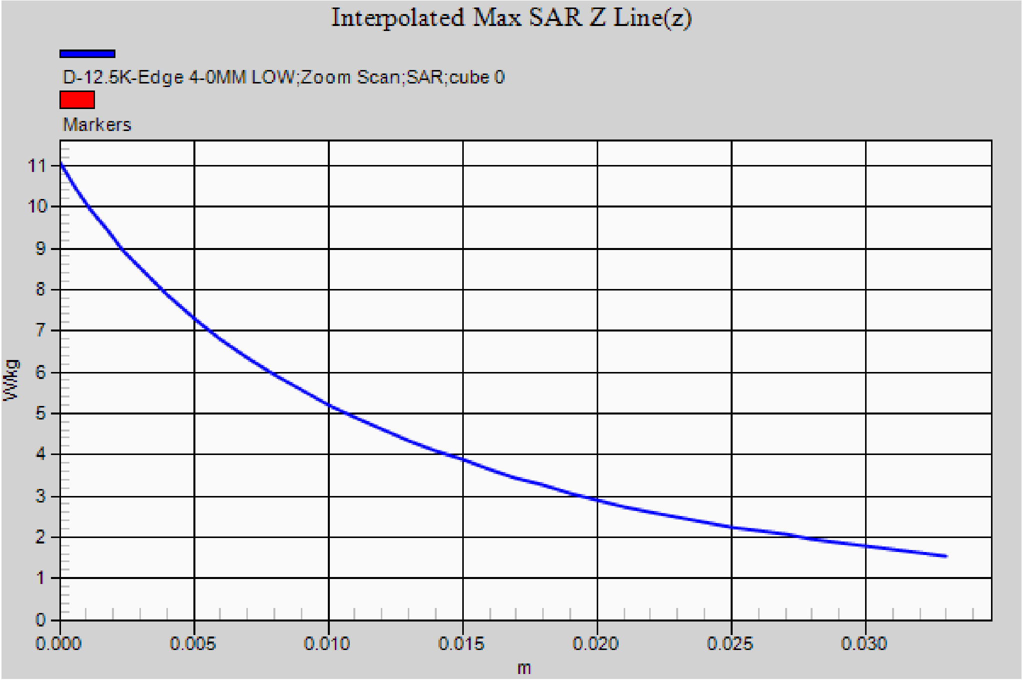
Communication System: 450; Communication System Band: CW 450 MHz; Duty Cycle: 1:1;
Frequency: 400.025 MHz; Medium parameters used: f = 450MHz; σ= 0.88 mho/m; εr =44.93; ρ= 1000 kg/m³ ;
Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.3

DASY Configuration:

- Probe: ES3DV3 – SN3337; ConvF(7.23, 7.23, 7.23); Calibrated: Sep. 26, 2022;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

BODY/D-12.5K-Edge 4-0MM LOW/Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 8.24 W/kg
BODY/D-12.5K-Edge 4-0MM LOW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 94.982 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 11.1 W/kg
SAR(1 g) = 7.46 W/kg; SAR(10 g) = 5.25 W/kg
Maximum value of SAR (measured) = 8.45 W/kg




Interpolated Max SAR Z Line(z)
D-12.5K-Edge 4-0MM LOW;Zoom Scan;SAR;cube 0
Markers
W/kg
m
0.000
0.005
0.010
0.015
0.020
0.025
0.030

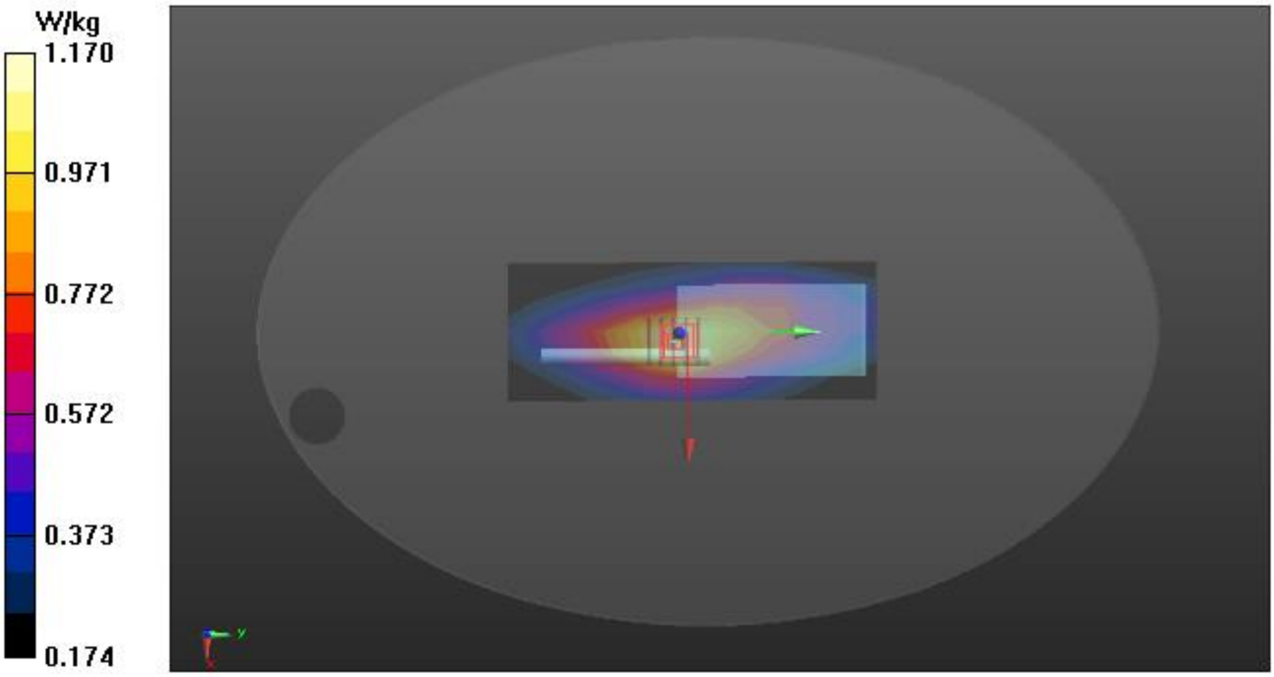
VHF: Analog
Test Laboratory: AGC Lab **Date: Apr. 03, 2023**
Mid- Face up 25mm (12.5 KHz)
DUT: Dual Band Digital Two Way Radio; Type: VDG-UV008

Communication System: 150; Communication System Band: CW 150MHz; Duty Cycle: 1:1;
Frequency:155.000 MHz; Medium parameters used: f = 150MHz; σ= 0.74 mho/m; εr =53.18; ρ= 1000 kg/m³ ;
Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.2, Liquid temperature (℃): 20.9

DASY Configuration:

- Probe: ES3DV3 – SN3337; ConvF(8.03, 8.03, 8.03); Calibrated: Sep. 26, 2022;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

BODY/A-12.5K-FACE UP-NO CLIP-0MM/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.11 W/kg
BODY/A-12.5K-FACE UP-NO CLIP-0MM/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 37.758 V/m; Power Drift = -0.42 dB
Peak SAR (extrapolated) = 1.70 W/kg
SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.704 W/kg
Maximum value of SAR (measured) = 1.17 W/kg



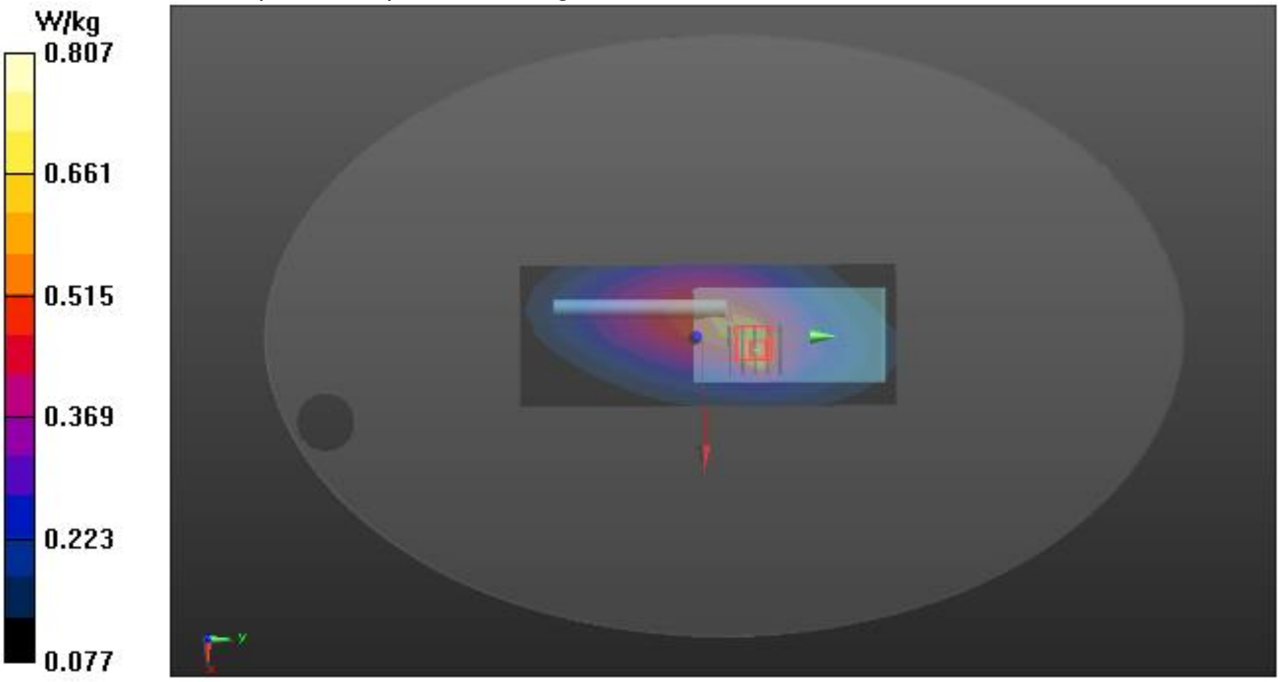
Test Laboratory: AGC Lab **Date: Apr. 03, 2023**
Mid -Body- Back with all accessories 0mm (12.5 KHz)
DUT: Dual Band Digital Two Way Radio; Type: VDG-UV008

Communication System: 150; Communication System Band: CW 150MHz; Duty Cycle: 1:1;
Frequency:155.000 MHz; Medium parameters used: f = 150 MHz; σ= 0.74 mho/m; εr =53.18; ρ= 1000 kg/m ;
Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.2, Liquid temperature (℃): 20.9

DASY Configuration:

- Probe: ES3DV3 – SN3337; ConvF(8.03, 8.03, 8.03); Calibrated: Sep. 26, 2022;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

BODY/A-12.5K-BACK+CLIP-0MM/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.690 W/kg
BODY/A-12.5K-BACK+CLIP-0MM/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.209 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 1.48 W/kg
SAR(1 g) = 0.636 W/kg; SAR(10 g) = 0.387 W/kg
Maximum value of SAR (measured) = 0.807 W/kg



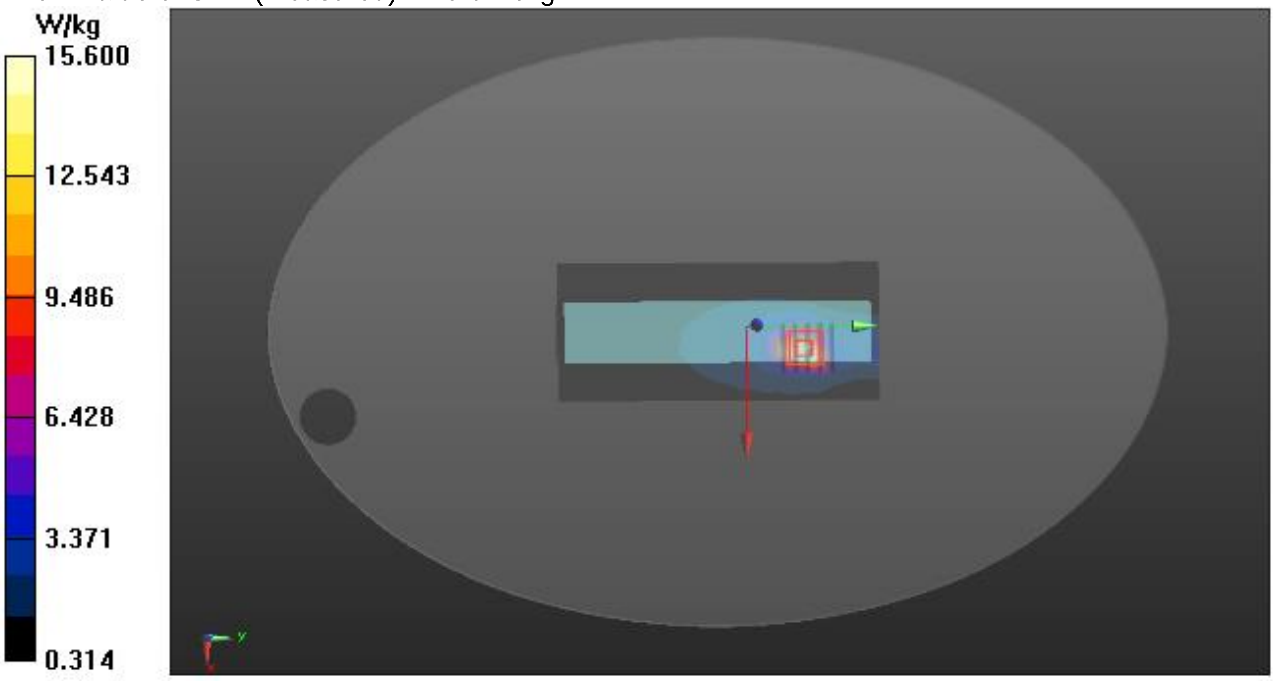
Test Laboratory: AGC Lab **Date: Apr. 03, 2023**
Low- Hand- Edge2(Right) 0mm (12.5 KHz)
DUT: Dual Band Digital Two Way Radio; Type: VDG-UV008

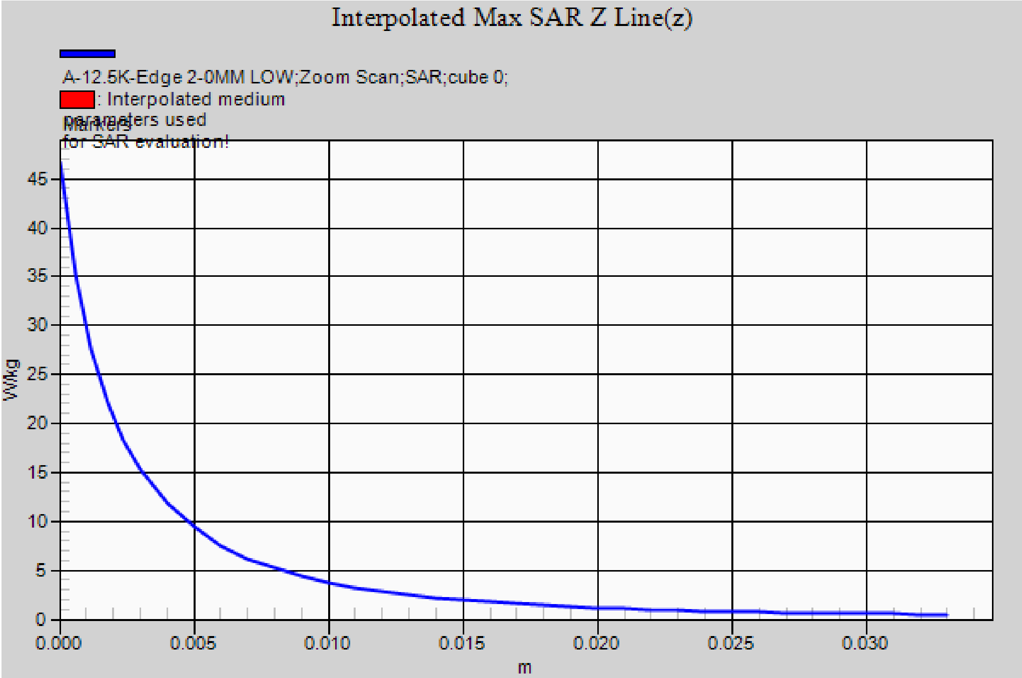
Communication System: 150; Communication System Band: CW 150MHz; Duty Cycle: 1:1;
Frequency: 136.025 MHz; Medium parameters used: f = 150MHz; σ= 0.74 mho/m; εr =53.18; ρ= 1000 kg/m³ ;
Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.2, Liquid temperature (℃): 20.9

DASY Configuration:

- Probe: ES3DV3 – SN3337; ConvF(8.03, 8.03, 8.03); Calibrated: Sep. 26, 2022;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

BODY/A-12.5K-Edge 2-0MM LOW/Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 19.2 W/kg
BODY/A-12.5K-Edge 2-0MM LOW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 54.579 V/m; Power Drift = -0.85 dB
Peak SAR (extrapolated) = 46.7 W/kg
SAR(1 g) = 11.9 W/kg; SAR(10 g) = 4.81 W/kg
Maximum value of SAR (measured) = 15.6 W/kg




Interpolated Max SAR Z Line(z)
A-12.5K-Edge 2-0MM LOW;Zoom Scan;SAR;cube 0;
: Interpolated medium parameters used for SAR evaluation!
Markers
W/kg
m
0
5
10
15
20
25
30
35
40
45
0.000
0.005
0.010
0.015
0.020
0.025
0.030

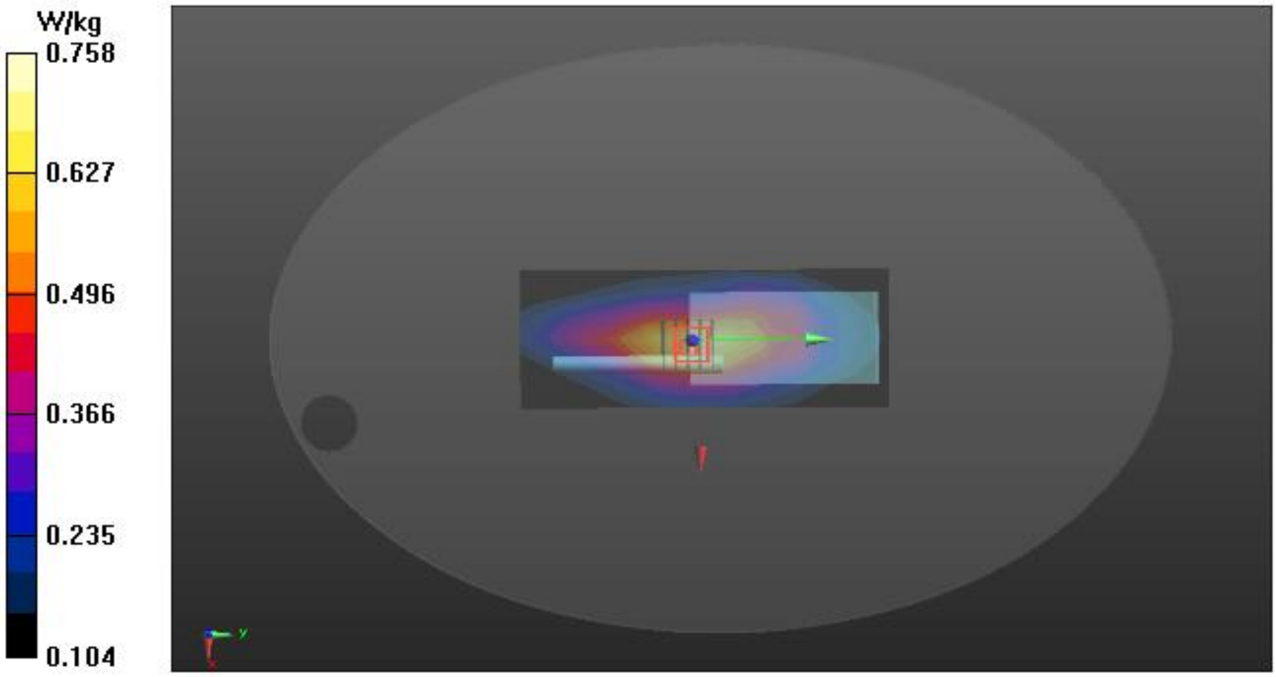
VHF: Analog
Test Laboratory: AGC Lab **Date: Apr. 03, 2023**
Mid- Face up 25mm (12.5 KHz)
DUT: Dual Band Digital Two Way Radio; Type: VDG-UV008

Communication System: 150; Communication System Band: CW 150MHz; Duty Cycle: 1:1;
Frequency:155.000 MHz; Medium parameters used: f = 150MHz; σ= 0.74 mho/m; εr =53.18; ρ= 1000 kg/m³ ;
Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.2, Liquid temperature (℃): 20.9

DASY Configuration:

- Probe: ES3DV3 – SN3337; ConvF(8.03, 8.03, 8.03); Calibrated: Sep. 26, 2022;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

BODY/D-12.5K-FACE UP-NO CLIP-0MM/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.690 W/kg
BODY/D-12.5K-FACE UP-NO CLIP-0MM/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.465 V/m; Power Drift = -0.22 dB
Peak SAR (extrapolated) = 1.12 W/kg
SAR(1 g) = 0.647 W/kg; SAR(10 g) = 0.434 W/kg
Maximum value of SAR (measured) = 0.758 W/kg



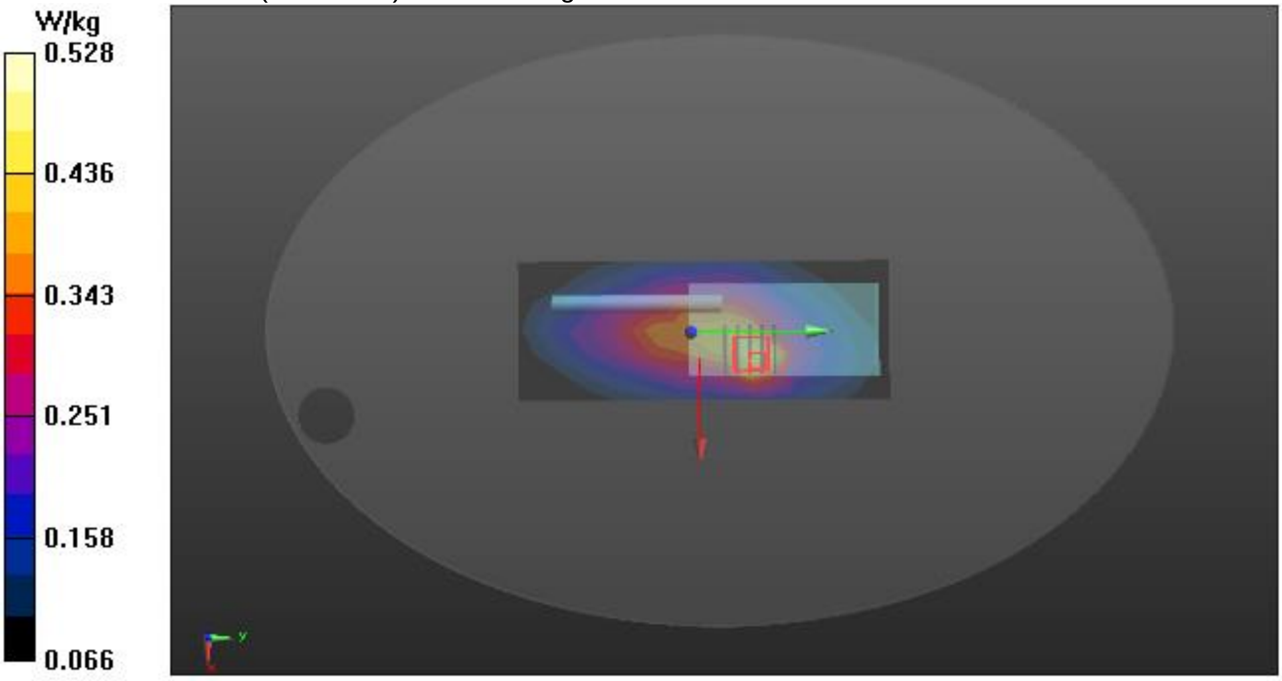
Test Laboratory: AGC Lab **Date: Apr. 03, 2023**
Mid -Body- Back with all accessories 0mm (12.5 KHz)
DUT: Dual Band Digital Two Way Radio; Type: VDG-UV008

Communication System: 150; Communication System Band: CW 150MHz; Duty Cycle: 1:1;
Frequency:155.000 MHz; Medium parameters used: f = 150 MHz; σ= 0.74 mho/m; εr =53.18; ρ= 1000 kg/m ;
Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.2, Liquid temperature (℃): 20.9

DASY Configuration:

- Probe: ES3DV3 – SN3337; ConvF(8.03, 8.03, 8.03); Calibrated: Sep. 26, 2022;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

BODY/D-12.5K-BACK+CLIP-0MM/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.480 W/kg
BODY/D-12.5K-BACK+CLIP-0MM/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.849 V/m; Power Drift = -0.30 dB
Peak SAR (extrapolated) = 0.957 W/kg
SAR(1 g) = 0.437 W/kg; SAR(10 g) = 0.275 W/kg
Maximum value of SAR (measured) = 0.528 W/kg



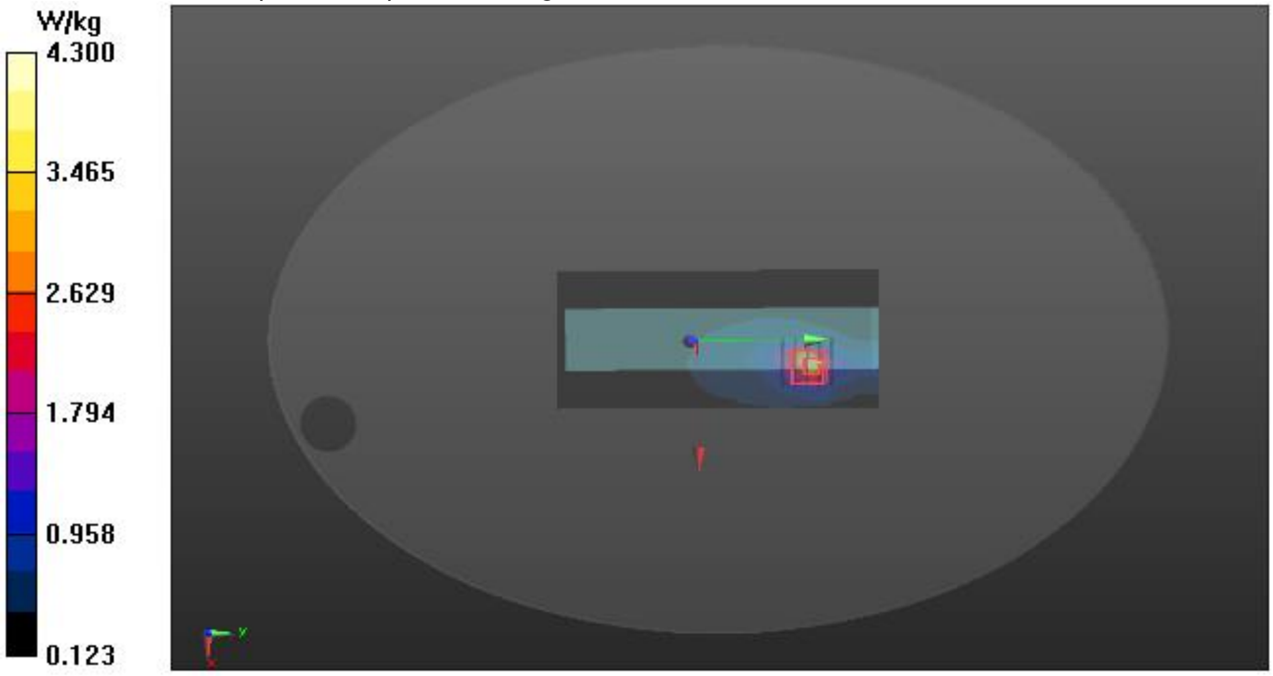
Test Laboratory: AGC Lab **Date: Apr. 03, 2023**
High- Hand- Edge2(Right) 0mm (12.5 KHz)
DUT: Dual Band Digital Two Way Radio; Type: VDG-UV008

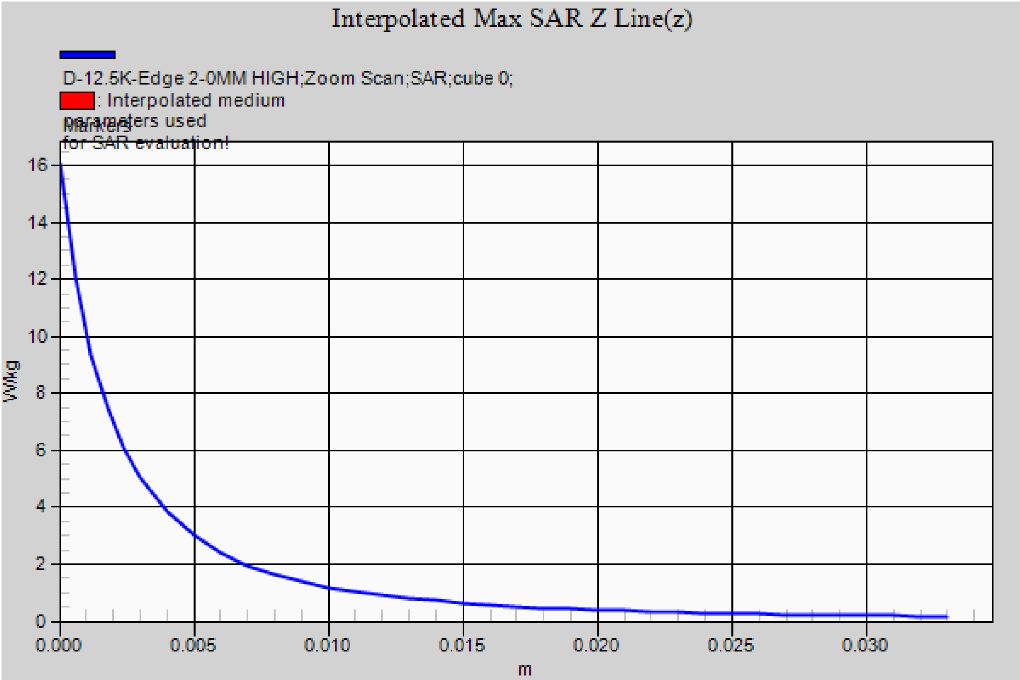
Communication System: 150; Communication System Band: CW 150MHz; Duty Cycle: 1:1;
Frequency: 173.975 MHz; Medium parameters used: f = 150MHz; σ= 0.74 mho/m; εr =53.18; ρ= 1000 kg/m³ ;
Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.2, Liquid temperature (℃): 20.9

DASY Configuration:

- Probe: ES3DV3 – SN3337; ConvF(8.03, 8.03, 8.03); Calibrated: Sep. 26, 2022;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

BODY/D-12.5K-Edge 2-0MM HIGH/Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 4.46 W/kg
BODY/D-12.5K-Edge 2-0MM HIGH/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.373 V/m; Power Drift = -0.45 dB
Peak SAR (extrapolated) = 16.1 W/kg
SAR(1 g) = 3.78 W/kg; SAR(10 g) = 1.53 W/kg
Maximum value of SAR (measured) = 4.30 W/kg




Interpolated Max SAR Z Line(z)
D-12.5K-Edge 2-0MM HIGH;Zoom Scan;SAR;cube 0;
: Interpolated medium parameters used for SAR evaluation!
Markers
W/kg
m
0.000
0.005
0.010
0.015
0.020
0.025
0.030
0
2
4
6
8
10
12
14
16

APPENDIX C. TEST SETUP PHOTOGRAPHS

Face up 25 mm

Body back touch with all accessories

The thickness of EUT is 3.6cm

Hand back 0mm

Hand Front 0mm

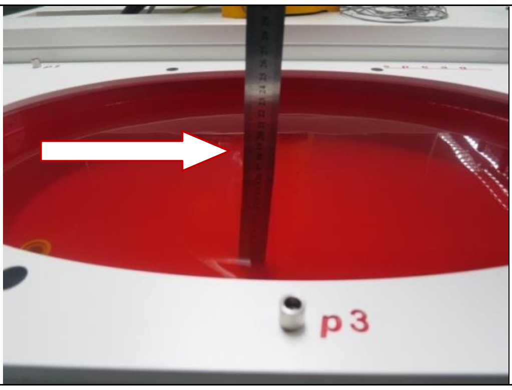
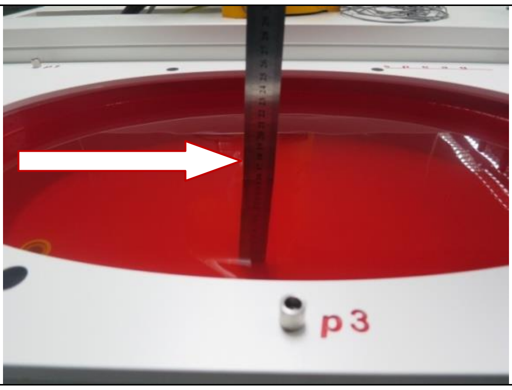
Hand Edge2(Right) 0mm

Hand Edge4(Left) 0mm

Note : The headset is just for testing. This tested and electrically similar headsets may be used.

DEPTH OF THE LIQUID IN THE PHANTOM—ZOOM IN

Note：The position used in the measurement were according to EN62209-2

150MHz head	450MHz head
	

APPENDIX D. CALIBRATION DATA

Refer to Attached files.

----END OF REPORT----

Conditions of Issuance of Test Reports

1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").

2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.

3.The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.

4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.

5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.

6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.

7.Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.

8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.

9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.

Attestation of Global Compliance(Shenzhen)Co., Ltd
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd
Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: http://www.agccert.com/