

# SAR Test Report

# Report No.: AGC02294220803FH01

FCC ID	:	2AJGM-UV9G
PRODUCT DESIGNATION	:	GMRS Two way radio
BRAND NAME	:	BAOFENG, POFUNG
MODEL NAME	:	UV-9G, GMRS-9R, GM-56, GM-57WP, P52UV
APPLICANT	:	PO FUNG ELECTRONIC (HK) INTERNATONAL GROUP COMPANY LIMITED
DATE OF ISSUE	:	Sep. 07, 2022
STANDARD(S)	:	IEEE Std. 1528:2013 FCC 47 CFR Part 2§2.1093 IEEE Std C95.1 ™-2005 IEC 62209-1: 2016
REPORT VERSION	:	V1.0







# **Report Revise Record**

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Sep. 07, 2022	Valid	Initial Release



Test Report				
Applicant Name	PO FUNG ELECTRONIC (HK) INTERNATONAL GROUP COMPANY LIMITED			
Applicant Address	Room 1508, 15/F, Office Tower II, Grand Plaza, 625 Nathan Road, Kowloon, Hong Kong			
Manufacturer Name	PO FUNG ELECTRONIC (HK) INTERNATONAL GROUP COMPANY LIMITED			
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Factory Name	PO FUNG ELECTRONIC (HK) INTERNATONAL GROUP COMPANY LIMITED			
Factory Address	Room 1508, 15/F, Office Tower II, Grand Plaza, 625 Nathan Road, Kowloon, Hong Kong			
Product Designation	GMRS Two way radio			
Brand Name	BAOFENG, POFUNG			
Model Name	UV-9G, GMRS-9R, GM-56, GM-57WP, P52UV			
Different Description	The same electromagnetic emissions and electromagnetic compatibility characteristics. UV-9G, GMRS-9R, GM-56, GM-57WP and P52UV are just different model name & Brand name & appearance outside speaker, the rest are the same.			
EUT Voltage	DC7.4 V			
Applicable Standard	IEEE Std. 1528:2013 FCC 47 CFR Part 2§2.1093 IEEE Std C95.1 ™-2005 IEC 62209-1: 2016			
Test Date	Aug. 19, 2022			
Report Template	AGCRT- US -PTT/SAR (2021-04-20)			

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

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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	Separation	Highest Reported 1g-SAR(W/kg)		
Frequency Band	Separation	Face Up (with 25mm separation)	Back Touch	
462.5625-462.7125MHz (4W)		1.313	1.464	
467.5625-467.7125MHz (0.5W)	12.5KHz	0.078	0.102	
462.5500-462.7250MHz (4W)		1.360	1.208	
467.5500-467.7250MHz (4W)		0.896	1.339	
462.5625-462.7125MHz (4W)		1.483	1.156	
462.5500-462.7250MHz (4W)	25KHz	1.257	1.285	
467.5500-467.7250MHz (4W)		0.866	0.833	

This device is compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure environment limits(1.6W/kg) specified in 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1, and had been tested in accordance with measurement methods and procedures specified in IEEE 1528-2013 and the following specific FCC Test Procedures:

KDB 447498 D01 General RF Exposure Guidance v06

KDB 865664 D01 SAR Measurement 100MHz to 6GHz v01r04

KDB 643646 D01 SAR Test for PTT Radios v01r03



# 2. GENERAL INFORMATION

# 2.1. EUT Description

General Information	
Product Name	GMRS Two way radio
Test Model	UV-9G
Hardware Version	V02
Software Version	V1.0
Exposure Category:	General Population/Uncontrolled Environments
Device Category	FM Portable Transceiver
Modulation Type	FM
TX Frequency Range	462.5500MHz-462.7250MHz (GMRS 462 MHz main channels) 462.5625MHz-462.7125MHz (GMRS 462 MHz interstitial channels) 467.5500MHz-467.7250MHz (GMRS 467 MHz main channels) 467.5625MHz-467.7125MHz (GMRS 467 MHz interstitial channels)
Rated Power	0.5W/4W (It was fixed by the manufacturer, any individual can't arbitrarily change it)
Max. Output Power	35.87dBm
Channel Spacing	12.5 KHz& 25 KHz
Antenna Type	Detachable Antenna
Antenna Gain	0.8dBi
Body-Worn Accessories:	Belt Clip and headset
Face-Head Accessories:	None
Battery Type (s) Tested:	DC 7.4V, 1800mAh (by battery)
Note: 1. The sample used fo 2. The test sample has	r testing is end product. The no any deviation to the test method of standard mentioned in page 1.
Product	Type

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# **3. SAR MEASUREMENT SYSTEM**

# Image: Service Conversion </tr

# 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. IEEE 1528, EN62209,IEC 62209, etc.)Under ISO17025.The calibration data are in Appendix D.

	Frobe Specification
Model	ES3DV3
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%.

#### Isotropic E-Field Probe Specification

# 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-converter and a command decoder with a control logic unit. Transmission to the measurement sever is accomplished through an optical downlink for 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	E Contraction of the second se



#### 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 form 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  $\varepsilon$ =3 and loss tangent  $\delta$  = 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 ( $\rho$ ). The equation description is as below:

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

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

Е

ρ

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

$$SAR = c_h \frac{dT}{dt}_{t=0}$$

Where

SAR is the specific absorption rate in watts per kilogram;

- $\sigma$  is the r.m.s. value of the electric field strength in the tissue in volts per meter;  $\sigma$  is the conductivity of the tissue in siemens per metre;
  - is the density of the tissue in kilograms per cubic metre;
- c<sub>h</sub> is the heat capacity of the tissue in joules per kilogram and Kelvin;

 $\frac{dT}{dt}$  | 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 of 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 IEEE Standard 1528 and IEC62209 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.

	$\leq$ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	$5 \pm 1 \text{ mm}$	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5 \text{ mm}$
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30°±1°	20° ± 1°
	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
Maximum area scan spatial resolution: $\Delta x_{Area}$ , $\Delta y_{Area}$	blution: $\Delta x_{Area}$ , $\Delta y_{Area}$ When the x or y dimension of the temperature or y dimension of the temperature or y dimension of the test device measurement point on the test device measurement point poin	

Area Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100MHz to 6GHz

#### Step 3: Zoom Scan

Zoom Scan are used to assess the peak spatial SAR value within a cubic average volume containing 1g abd 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.



Maximum zoom scan s	an spatial resolution: Δx <sub>Zoom</sub> , Δy <sub>Zoom</sub>		$\leq 2 \text{ GHz}: \leq 8 \text{ mm}$ 2 - 3 GHz: $\leq 5 \text{ mm}^*$	$3 - 4 \text{ GHz} \le 5 \text{ mm}^*$ $4 - 6 \text{ GHz} \le 4 \text{ mm}^*$
uniform		grid: ∆z <sub>Zoom</sub> (n)	$\leq 5 \text{ mm}$	$3 - 4$ GHz: $\leq 4$ mm $4 - 5$ GHz: $\leq 3$ mm $5 - 6$ GHz: $\leq 2$ mm
Maximum zoom scan spatial resolution, normal to phantom surface	graded	$\Delta z_{Zoom}(1)$ : between 1 <sup>st</sup> two points closest to phantom surface	$\leq$ 4 mm	$3 - 4 \text{ GHz}: \le 3 \text{ mm}$ $4 - 5 \text{ GHz}: \le 2.5 \text{ mm}$ $5 - 6 \text{ GHz}: \le 2 \text{ mm}$
	grid	∆z <sub>Zoom</sub> (n>1): between subsequent points	surface	Zoom(n-1)
Minimum zoom scan volume	x, y, z		$\geq$ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

#### Zoom Scan Parameters extracted from KDB865664 D01 SAR Measurement 100MHz to 6GHz

<sup>\*</sup> 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.

#### 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 10% are listed in 6.2

# 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 Head (100%)	38.56	3.95	56.32	0.98	0.19	0.0	0.0	0.0

#### 5.2. Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEC 62209-1 have been incorporated in the following table. The body tissue dielectric parameters recommended by the IEC 62209-2 have been incorporated in the following table.

Target Frequency	ł	nead	body		
(MHz)	٤r	σ (S/m)	٤r	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	
915	41.5	0.98	41.5	0.98	
1450	40.5	1.20	40.5	1.20	
1610	40.3	1.29	40.3	1.29	
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	

( $\epsilon r$  = relative permittivity,  $\sigma$  = conductivity and  $\rho$  = 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.

Tissue Stimulant Measurement for 450MHz									
	Dielectric Par	ameters (±10%)							
Fr.	F	Tissue Temp	Test time						
(MHz)	εr43.50(39.150 - 47.850)	δ[s/m]0.87(0.783 - 0.957)	[°C]						
462.000	43.05	0.85							
450.000	42.88	0.86	21.8	Aug. 19, 2022					
467.000	42.64	0.87							



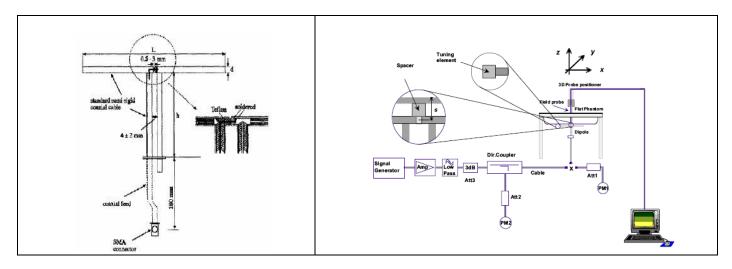
# 6. SAR SYSTEM CHECK PROCEDURE

# 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 IEEE-1528 standard, and is complied with mechanical and electrical specifications in line with the requirements of IEEE. the table below provides details for the mechanical and electrical specifications for the dipoles
--	---

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

# 6.2.2. System Check Result

System Performance Check at 450MHz									
Validation Kit: D450V3 SN:1113									
Frequency		rget (W/kg)		ce Result 0%)	Normalized to 1W(W/kg)		Tissue Temp.	Test time	
[MHz]	1g	10g	1g	10g	1g	10g	[°Cj		
450 head	4.61	3.09	4.149-5.071	2.781-3.399	4.99	3.30	21.8	Aug. 19, 2022	

Note:

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

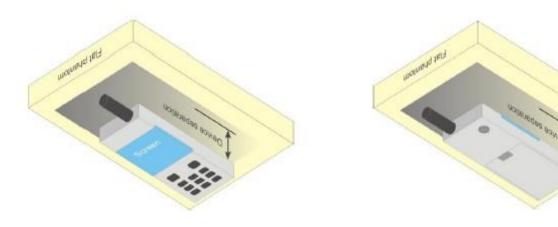


# 7. EUT TEST POSITION

This EUT was tested in Front Face and Rear Face.

# 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 front of face, and body back touch with belt clip.





# 8. SAR EXPOSURE LIMITS

# Limits for General population/Uncontrolled exposure Environment

Type Exposure Limits	general population/uncontrolled exposure limits (W/kg)					
Spatial Average SAR (whole body)	1.6					



# 9. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Con Fuhai Street, Bao'an District, Shenzhen, Guangdong, China	
Designation Number	CN1259
FCC Test Firm Registration Number	975832
A2LA Cert. No.	5054.02
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA



# **10. TEST EQUIPMENT LIST**

Equipment	Manufacturer/	Identificat	Software	Current	Next calibration
description	Model	ion No.	version	calibration date	date
Stäubli Robot	Stäubli-TX60	F13/5Q2U D1/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	Aug. 24, 2021	Aug. 23, 2022
SAM Twin Phantom	Speag-SAM	1790	N/A	N/A	N/A
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
Dipole	Speag-D450V3	SN:1113	N/A	Feb. 05,2021	Feb. 04,2024
Signal Generator	Agilent-E4438C	US414613 65	V5.03	Aug. 03, 2022	Aug. 02, 2023
Vector Analyzer	Agilent / E4440A	MY443039 16	N/A	Mar. 28, 2022	Mar. 27, 2023
Network Analyzer	Rhode & Schwarz ZVL6	SN101443	3.2	Oct. 28,2021	Oct. 27,2022
Attenuator	Warison /WATT-6SR1211	S/N:WRJ3 4AYM2F1	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. 07,2021	Sep. 06,2022
Power Sensor	NRP-Z23	100323	N/A	Feb. 16,2022	Feb. 15,2023
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	Dec. 07, 2021	Dec. 06, 2022

Note: Per KDB 865664 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  $5\Omega$  of calibrated measurement.



# **11. MEASUREMENT UNCERTAINTY**

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty 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.

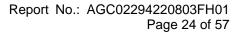
Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape	
Multiplying Factor(a)	1/k(b)	1/√3	1/√6	$1/\sqrt{2}$	

- (a) Standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity
- (b)  $\kappa$  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.





Measu	urement ur	DASY Incertainty fo		ty- ES3DV averaged o		/ 10 gram.			
а	b	С	d	e f(d,k)	f	g	h c×f/e	i c×g/e	k
Uncertainty Component	Sec.	Tol (± %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (±%)	10g Ui (±%)	vi
Measurement System									
Probe calibration	E.2.1	6.65	Ν	1	1	1	6.65	6.65	8
Axial Isotropy	E.2.2	0.25	R	$\sqrt{3}$	√0.5	√0.5	0.10	0.10	8
Hemispherical Isotropy	E.2.2	1.3	R	$\sqrt{3}$	√0.5	√0.5	0.53	0.53	8
Boundary effect	E.2.3	1	R	$\sqrt{3}$	1	1	0.58	0.58	8
Linearity	E.2.4	0.3	R	$\sqrt{3}$	1	1	0.17	0.17	8
System detection limits	E.2.4	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	8
Modulation response	E2.5	3.3	R	$\sqrt{3}$	1	1	1.91	1.91	∞
Readout Electronics	E.2.6	0.15	N	1	1	1	0.15	0.15	8
Response Time	E.2.7	0	R	$\sqrt{3}$	1	1	0	0	∞
Integration Time	E.2.8	1.7	R	$\sqrt{3}$	1	1	0.98	0.98	∞
RF ambient conditions-Noise	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient conditions-reflections	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	8
Probe positioner mechanical tolerance	E.6.2	0.4	R	√3	1	1	0.23	0.23	8
Probe positioning with respect to phantom shell	E.6.3	6.7	R	√3	1	1	3.87	3.87	8
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	4	R	√3	1	1	2.31	2.31	8
Test sample Related									
Test sample positioning	E.4.2	2.9	Ν	1	1	1	2.90	2.90	8
Device holder uncertainty	E.4.1	3.6	N	1	1	1	3.60	3.60	8
Output power variation—SAR drift measurement	E.2.9	5	R	√3	1	1	2.89	2.89	∞
SAR scaling	E.6.5	5	R	$\sqrt{3}$	1	1	2.89	2.89	8
Phantom and tissue parameters				•					
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	6.6	R	√3	1	1	3.81	3.81	8
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.9	N	1	1	0.84	1.90	1.60	8
Liquid conductivity measurement	E.3.3	4	N	1	0.78	0.71	3.12	2.84	М
Liquid permittivity measurement	E.3.3	5	N	1	0.23	0.26	1.15	1.30	М
Liquid conductivity—temperature uncertainty	E.3.4	2.5	R	√3	0.78	0.71	1.13	1.02	8
Liquid permittivity—temperature uncertainty	E.3.4	2.5	R	√3	0.23	0.26	0.33	0.38	8
Combined Standard Uncertainty			RSS				11.79	11.62	
Expanded Uncertainty (95% Confidence interval)			K=2				23.58	23.25	



Suctor	n Check u	DASY L		ty- ES3DV		/ 10 gram			
	b		d d	e	f		h	i	k
a		Tol	Prob.	f(d,k) Div.		g Ci (10g)	c×f/e 1g Ui	c×g/e 10g Ui	vi
Uncertainty Component	Sec.	(± %)	Dist.	DIV.	Ci (1g)	Ci (10g)	(±%)	(±%)	VI
Measurement System		I	1	1		1	1		1
Probe calibration drift	E.2.1	0.5	N	1	1	1	0.5	0.5	∞
Axial Isotropy	E.2.2	0.25	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Hemispherical Isotropy	E.2.2	1.3	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Boundary effect	E.2.3	1	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Linearity	E.2.4	0.3	R	$\sqrt{3}$	0	0	0.00	0.00	8
System detection limits	E.2.4	1.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Modulation response	E2.5	3.3	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Readout Electronics	E.2.6	0.15	N	1	0	0	0.00	0.00	∞
Response Time	E.2.7	0	R	√3	0	0	0.00	0.00	∞
Integration Time	E.2.8	1.7	R	$\sqrt{3}$	0	0	0.00	0.00	8
RF ambient conditions-Noise	E.6.1	3.0	R	$\sqrt{3}$	0	0	0.00	0.00	8
RF ambient conditions-reflections	E.6.1	3.0	R	$\sqrt{3}$	0	0	0.00	0.00	8
Probe positioner mechanical tolerance	E.6.2	0.4	R	√3	1	1	0.23	0.23	∞
Probe positioning with respect to phantom shell	E.6.3	6.7	R	√3	1	1	3.87	3.87	8
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	4	R	√3	0	0	0.00	0.00	8
System check source (dipole)									
Deviation of experimental dipoles	E.6.4	2.0	N	1	1	1	2.00	2.00	8
Input power and SAR drift measurement	8,6.6.4	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Dipole axis to liquid distance	8,E.6.6	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	8
Phantom and tissue parameters									
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	6.6	R	√3	1	1	3.81	3.81	8
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.9	N	1	1	0.84	1.90	1.60	8
Liquid conductivity measurement	E.3.3	4	N	1	0.78	0.71	3.12	2.84	Μ
Liquid permittivity measurement	E.3.3	5	N	1	0.23	0.26	1.15	1.30	М
Liquid conductivity—temperature uncertainty	E.3.4	2.5	R	√3	0.78	0.71	1.13	1.02	8
Liquid permittivity—temperature uncertainty	E.3.4	2.5	R	√3	0.23	0.26	0.33	0.38	8
Combined Standard Uncertainty			RSS				7.34	7.07	
Expanded Uncertainty (95% Confidence interval)			K=2				14.67	14.14	



				ty- ES3DV3					
System	Validation	uncertainty	for Dipole		over 1 gra	m / 10 gram		г.	Г
а	b	с	d	e f(d,k)	f	g	h c×f/e	ı c×g/e	k
Uncertainty Component	Sec.	Tol (±%)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (±%)	10g Ui (±%)	vi
Measurement System	•	,		•	•	•		,	•
Probe calibration	E.2.1	6.65	N	1	1	1	6.65	6.65	∞
Axial Isotropy	E.2.2	0.25	R	$\sqrt{3}$	1	1	0.14	0.14	∞
Hemispherical Isotropy	E.2.2	1.3	R	√3	0	0	0.00	0.00	∞
Boundary effect	E.2.3	1	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	E.2.4	0.3	R	$\sqrt{3}$	1	1	0.17	0.17	∞
System detection limits	E.2.4	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	E2.5	3.3	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Readout Electronics	E.2.6	0.15	N	1	1	1	0.15	0.15	∞
Response Time	E.2.7	0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Integration Time	E.2.8	1.7	R	$\sqrt{3}$	0	0	0.00	0.00	8
RF ambient conditions-Noise	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	8
RF ambient conditions-reflections	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	8
Probe positioner mechanical tolerance	E.6.2	0.4	R	√3	1	1	0.37	0.37	8
Probe positioning with respect to phantom shell	E.6.3	6.7	R	√3	1	1	3.87	3.87	8
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	4	R	√3	1	1	2.31	2.31	∞
System check source (dipole)									
Deviation of experimental dipole from numerical dipole	E.6.4	5.0	N	1	1	1	5.00	5.00	∞
Input power and SAR drift measurement	8,6.6.4	5.0	R	√3	1	1	2.89	2.89	∞
Dipole axis to liquid distance	8,E.6.6	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	8
Phantom and tissue parameters									
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	6.6	R	$\sqrt{3}$	1	1	3.81	3.81	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.9	N	1	1	0.84	1.90	1.60	∞
Liquid conductivity measurement	E.3.3	4	Ν	1	0.78	0.71	3.12	2.84	М
Liquid permittivity measurement	E.3.3	5	N	1	0.23	0.26	1.15	1.30	М
Liquid conductivity—temperature uncertainty	E.3.4	2.5	R	√3	0.78	0.71	1.13	1.02	∞
Liquid permittivity—temperature uncertainty	E.3.4	2.5	R	√3	0.23	0.26	0.33	0.38	∞
Combined Standard Uncertainty			RSS				11.44	11.27	
Expanded Uncertainty (95% Confidence interval)			K=2				22.88	22.54	

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# **12. POWER MEASUREMENT**

Frequency (MHz)	Channel	Conducted Power (dBm)
ChannelSeparation:12.5KHz	·	
462.5625-462.7125MHz (4W)		
462.5625	1	34.92
462.6375	4	34.94
462.7125	7	34.90
467.5625-467.7125MHz (0.5W)		
467.5625	8	26.89
467.6375	11	26.94
467.7125	14	26.92
462.5500-462.7250MHz (4W)		
462.5500	15	35.23
462.6500	19	35.28
462.7250	22	35.27
467.5500-467.7250MHz (4W)	· · · ·	
467.5500	24	35.00
467.6500	27	35.02
467.7250	30	34.99

Frequency (MHz)	Channel	Conducted Power (dBm)			
ChannelSeparation:25KHz					
462.5625-462.7125MHz (4W)					
462.5625	1	35.76			
462.6375	4	35.87			
462.7125	7	35.72			
462.5500-462.7250MHz (4W)					
462.5500	15	35.35			
462.6500	19	35.38			
462.7250	22	35.37			
467.5500-467.7250MHz (4W)					
467.5500	24	35.38			
467.6500	27	35.39			
467.7250	30	35.35			



# **13. TEST RESULTS**

# 13.1. SAR Test Results Summary

#### 13.1.1. Test position and configuration

Face up SAR was performed with the device configured in the positions according to KDB 643646 and Body SAR was performed with the device configured with all accessories close to the Flat Phantom.

# 13.1.2. Operation Mode

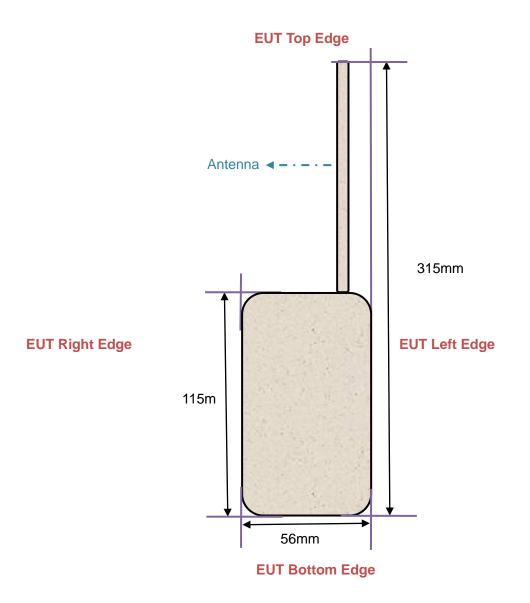
- Set the EUT to maximum output power level and transmit on lower, middle and top channel with 100% duty cycle individually during SAR measurement.
- Per KDB 643646 D01, Passive body-worn and audio accessories generally do not apply to the head SAR of PTT radios. Head SAR is measured with the front surface of the radio positioned at 2.5 cm parallel to a flat phantom.
- Per KDB 643646 D01, Body SAR is measured with the radio placed in a body-worn accessory, positioned against a flat phantom, representative of the normal operating conditions expected by users and typically with a standard default audio accessory supplied with the radio.

When testing antennas with the default battery: the same test measurement with head part.

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



# 13.1.3. Antenna Location: (back view)





# 13.1.4. SAR Test Results Summary

SAR MEASUREMEN											
Depth of Liquid (cm):>15 Relative Humidity (%): 58.4											
Product: GMRS Two				•		<u> </u>					
Test Mode: Hold to Face with 2.5 cm separation & body back touch with clip											
Position	Freq. (MHz)	Sepa ratio n (KHz)	Power Drift (±0.2dB)	SAR 1g with 100% duty Cycle (W/kg)	SAR 1g with 50% duty cycle (W/kg)	Max. Tune-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/kg)	Limit W/kg		
462.5625-462.7125MHz (4W)											
Face Up	462.5625		-0.35	1.880	0.940	36.02	34.92	1.313	1.6		
Face Up	462.6375		-0.06	1.750	0.875	36.02	34.94	1.138	1.6		
Face Up	462.7125		-0.27	1.370	0.685	36.02	34.90	0.943	1.6		
Back Touch +Belt Clip + headset	462.5625	12.5	-0.05	2.090	1.045	36.02	34.92	1.362	1.6		
Back Touch +Belt Clip + headset	462.6375		-0.07	2.120	1.060	36.02	34.94	1.381	1.6		
Back Touch +Belt Clip + headset	462.7125		-0.60	1.970	0.985	36.02	34.90	1.464	1.6		
467.5625-467.7125M	467.5625-467.7125MHz (0.5W)										
Face Up	467.6375		-0.20	0.147	0.074	26.99	26.94	0.078	1.6		
Back Touch +Belt Clip + headset	467.6375	12.5	-0.10	0.197	0.099	26.99	26.94	0.102	1.6		
462.5500-462.7250M	Hz (4W)										
Face Up	462.5500		-0.23	2.150	1.075	36.02	35.23	1.360	1.6		
Face Up	462.6500		-0.42	1.860	0.930	36.02	35.28	1.215	1.6		
Face Up	462.7250		-0.12	1.860	0.930	36.02	35.27	1.136	1.6		
Back Touch +Belt Clip + headset	462.5500	12.5	-0.08	1.930	0.965	36.02	35.23	1.179	1.6		
Back Touch +Belt Clip + headset	462.6500		-0.61	1.770	0.885	36.02	35.28	1.208	1.6		
Back Touch +Belt Clip + headset	462.7250		-0.50	1.620	0.810	36.02	35.27	1.080	1.6		
467.5500-467.7250M	Hz (4W)										
Face Up	467.6500		-0.53	1.260	0.630	36.02	35.02	0.896	1.6		
Back Touch +Belt Clip + headset	467.5500	12.5	-0.39	1.260	0.630	36.02	35.00	0.872	1.6		
Back Touch +Belt Clip + headset	467.6500		-0.40	1.940	0.970	36.02	35.02	1.339	1.6		
Back Touch +Belt Clip + headset Note: 1. During the test,	467.7250		-0.11	1.620	0.810	36.02	34.99	1.053	1.6		

Note: 1. During the test, EUT power is 4&0.5W with 100% duty cycle;

2. There is just default battery and antenna in this project;

$$10^{\frac{|\text{Drift}|}{10}} * \frac{\text{P}_{\text{max}}}{10}$$

3. Max\_ Scaled = 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

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SAR MEASUREMEN	IT									
Depth of Liquid (cm):>15					Relative Humidity (%): 58.4					
Product: GMRS Two	way radio									
Test Mode: Hold to F	ace with 2.5	cm sep	aration & b	ody back to	uch with cli	р				
Position	Freq. (MHz)	Sepa ratio n (KHz)	Power Drift (±0.2dB)	SAR 1g with 100% duty Cycle (W/kg)	SAR 1g with 50% duty cycle (W/kg)	Max. Tune-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/kg)	Limit W/kg	
462.5625-462.7125M	Hz (4W)			·					<u></u>	
Face Up	462.5625		-0.36	2.240	1.120	36.02	35.76	1.292	1.6	
Face Up	462.6375		-0.29	2.680	1.340	36.02	35.87	1.483	1.6	
Face Up	462.7125		-0.43	1.900	0.950	36.02	35.72	1.124	1.6	
Back Touch +Belt Clip + headset	462.5625	25	-0.21	1.980	0.990	36.02	35.76	1.103	1.6	
Back Touch +Belt Clip + headset	462.6375		-0.38	1.920	0.960	36.02	35.87	1.085	1.6	
Back Touch +Belt Clip + headset	462.7125		-0.33	2.000	1.000	36.02	35.72	1.156	1.6	
462.5500-462.7250M	Hz (4W)									
Face Up	462.5500	-	-0.34	1.930	0.965	36.02	35.35	1.218	1.6	
Face Up	462.6500		-0.14	2.100	1.050	36.02	35.38	1.257	1.6	
Face Up	462.7250		-0.29	1.680	0.840	36.02	35.37	1.043	1.6	
Back Touch +Belt Clip + headset	462.5500	25	-0.27	2.070	1.035	36.02	35.35	1.285	1.6	
Back Touch +Belt Clip + headset	462.6500		-0.23	1.950	0.975	36.02	35.38	1.191	1.6	
Back Touch +Belt Clip + headset	462.7250		-0.49	1.850	0.925	36.02	35.37	1.203	1.6	
467.5500-467.7250M	Hz (4W)									
Face Up	467.6500		-0.11	1.460	0.730	36.02	35.39	0.866	1.6	
Back Touch +Belt Clip + headset	467.6500	25	-0.62	1.250	0.625	36.02	35.39	0.833	1.6	

Note:

3.

1. During the test, EUT power is 4W with 100% duty cycle;

2. There is just default battery and antenna in this project;

$$10^{\frac{|\text{Drift}|}{10}} * \frac{\text{P}_{\text{max}}}{\text{P}_{\text{int}}} * \text{DC}$$

P\_ max = Maximum Power(W)

P\_ int = Initial Power(W)

Max\_ Scaled = SAR\_meas\*

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

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Repeated SAR											
Product: GMRS Two way radio											
Test Mode: Hold to Face with 2.5 cm separation & body back touch with clip											
Position	Frequency (MHz)	Separati on (KHz)	Power Drift (<±0.2dB)	Once SAR 1g with 100% duty cycle (W/kg)	Once SAR 1g with 50% duty cycle (W/kg)	Twice SAR 1g with 100% duty cycle (W/kg)	Twice SAR 1g with 50% duty cycle (W/kg)	Limit W/kg			
462.5500-462.7250MHz (4W)											
Face Up	462.5500	12.5	-0.23	2.130	1.065			1.6			
462.5625-462.7125MHz (4W)											
Face Up	462.6375	25	-0.45	2.250	1.125			1.6			



# APPENDIX A. SAR SYSTEM CHECK DATA

Test Laboratory: AGC Lab System Check Head 450MHz

#### DUT: Dipole 450 MHz Type: D450V3

Test date: Aug. 19, 2022

Communication System: CW; Communication System Band: CW; Duty Cycle: 1:1; Frequency: 450MHz; Medium parameters used: f = 450MHz;  $\sigma = 0.86$  mho/m;  $\epsilon r = 42.88$ ;  $\rho = 1000$  kg/m<sup>3</sup>; Phantom Type: Elliptical Phantom; Input Power=18dBm Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

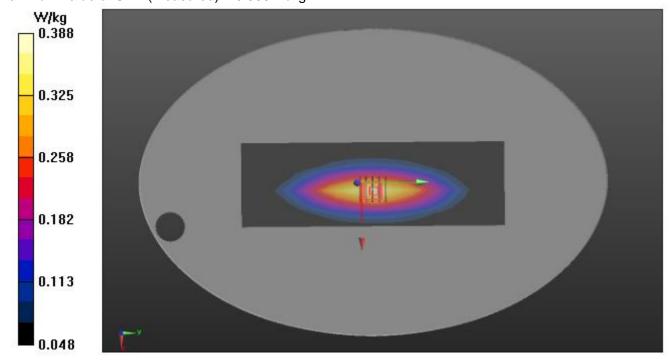
#### DASY Configuration:

- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- 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) = 0.388 W/kg

# Configuration/System Check 450MHz Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 19.554 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 0.531 W/kg SAR(1 g) = 0.315 W/kg; SAR(10 g) = 0.208 W/kg Maximum value of SAR (measured) = 0.388 W/kg





# APPENDIX B. SAR MEASUREMENT DATA

462.5625-462.7125MHz (4W) Test Laboratory: AGC Lab 450 Low- Face up 2.5cm (12.5 KHz) DUT: GMRS Two way radio; Type: UV-9G

Date: Aug. 19, 2022

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 462.5625 MHz; Medium parameters used: f = 450MHz;  $\sigma$ = 0.85 mho/m;  $\epsilon$ r =43.05;  $\rho$ = 1000 kg/m<sup>3</sup>; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

DASY Configuration:

- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022

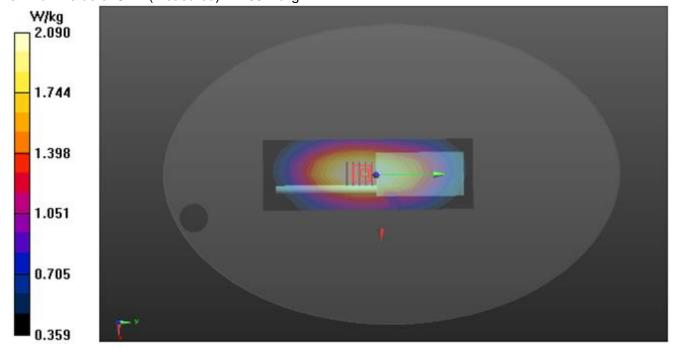
• Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108

• DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

**Configuration 2/A-12.5K-FACE UP-1/Area Scan (7x19x1):** Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 2.45 W/kg

Configuration 2/A-12.5K-FACE UP-1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 43.381 V/m; Power Drift = -0.35 dB Peak SAR (extrapolated) = 2.56 W/kg SAR(1 g) = 1.88 W/kg; SAR(10 g) = 1.42 W/kg Maximum value of SAR (measured) = 2.09 W/kg





Date: Aug. 19, 2022

#### Test Laboratory: AGC Lab 450 Mid -Body –Touch (12.5 KHz) DUT: GMRS Two way radio; Type: UV-9G

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 462.6375 MHz; Medium parameters used: f = 450 MHz;  $\sigma$ = 0.85 mho/m;  $\epsilon$ r =43.05;  $\rho$ = 1000 kg/m; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

DASY Configuration:

- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- 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/A-12.5K-BACK-4/Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.48 W/kg

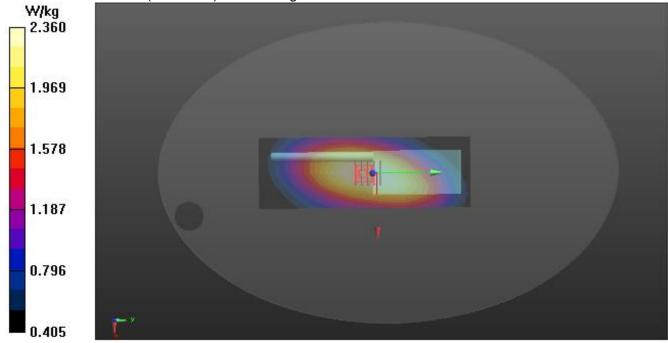
Configuration/A-12.5K-BACK-4/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 56.843 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 2.89 W/kg

#### SAR(1 g) = 2.12 W/kg; SAR(10 g) = 1.59 W/kg

Maximum value of SAR (measured) = 2.36 W/kg





Date: Aug. 19, 2022

#### Test Laboratory: AGC Lab 450 High -Body –Touch (12.5 KHz) DUT: GMRS Two way radio; Type: UV-9G

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 462.7125 MHz; Medium parameters used: f = 450 MHz;  $\sigma$ = 0.85 mho/m;  $\epsilon$ r =43.05;  $\rho$ = 1000 kg/m; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

DASY Configuration:

- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- 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/A-12.5K-BACK-7/Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.47 W/kg

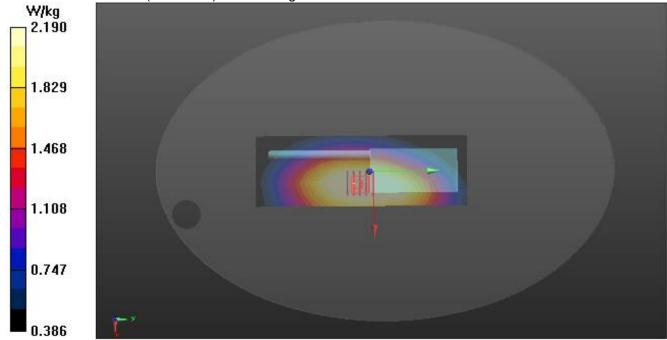
Configuration/A-12.5K-BACK-7/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 53.247 V/m; Power Drift = -0.60 dB

Peak SAR (extrapolated) = 2.66 W/kg

#### SAR(1 g) = 1.97 W/kg; SAR(10 g) = 1.49 W/kg

Maximum value of SAR (measured) = 2.19 W/kg





#### 467.5625-467.7125MHz (0.5W) Test Laboratory: AGC Lab 450 Mid- Face up 2.5cm (12.5 KHz) DUT: GMRS Two way radio; Type: UV-9G

Date: Aug. 19, 2022

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 467.6375MHz; Medium parameters used: f = 450MHz;  $\sigma$ = 0.87 mho/m;  $\epsilon$ r =42.64;  $\rho$ = 1000 kg/m<sup>3</sup>; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

DASY Configuration:

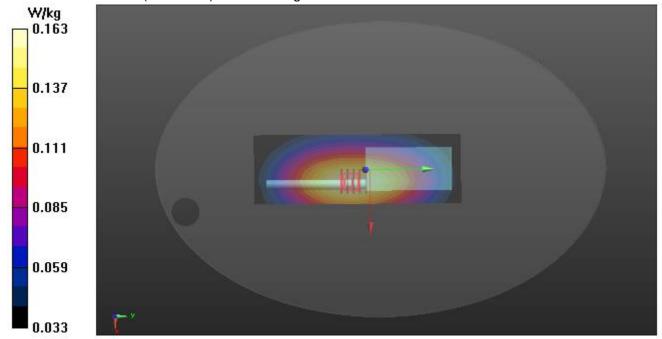
- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

**Configuration 2/A-1.25K-FACE UP-11/Area Scan (7x19x1):** Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 0.163 W/kg

Configuration 2/A-1.25K-FACE UP-11/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.844 V/m; Power Drift = -0.20 dB Peak SAR (extrapolated) = 0.197 W/kg SAR(1 g) = 0.147 W/kg; SAR(10 g) = 0.111 W/kg

Maximum value of SAR (measured) = 0.163 W/kg





# Test Laboratory: AGC Lab 450 Mid -Body –Touch (12.5 KHz) DUT: GMRS Two way radio; Type: UV-9G

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 467.6375MHz; Medium parameters used: f = 450 MHz;  $\sigma$ = 0.87 mho/m;  $\epsilon$ r =42.64;  $\rho$ = 1000 kg/m; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

DASY Configuration:

- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- 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/A-12.5K-BACK-11/Area Scan (7x19x1):** Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 0.212 W/kg

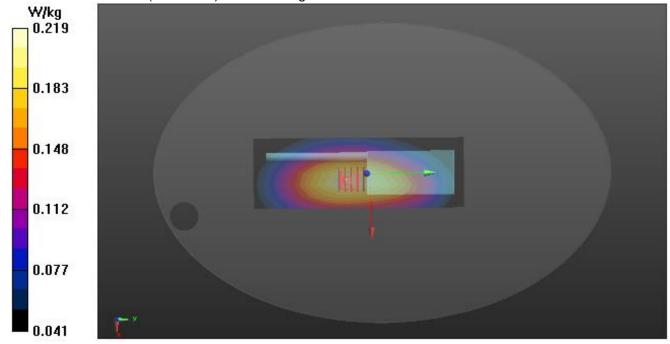
Configuration/A-12.5K-BACK-11/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.068 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 0.266 W/kg

SAR(1 g) = 0.197 W/kg; SAR(10 g) = 0.149 W/kg

Maximum value of SAR (measured) = 0.219 W/kg





462.5500-462.7250MHz (4W) Test Laboratory: AGC Lab 450 Low- Face up 2.5cm (12.5 KHz) DUT: GMRS Two way radio; Type: UV-9G

Date: Aug. 19, 2022

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 462.5500MHz; Medium parameters used: f = 450MHz;  $\sigma$ = 0.85 mho/m;  $\epsilon$ r =43.05;  $\rho$ = 1000 kg/m<sup>3</sup>; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

DASY Configuration:

- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- 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)

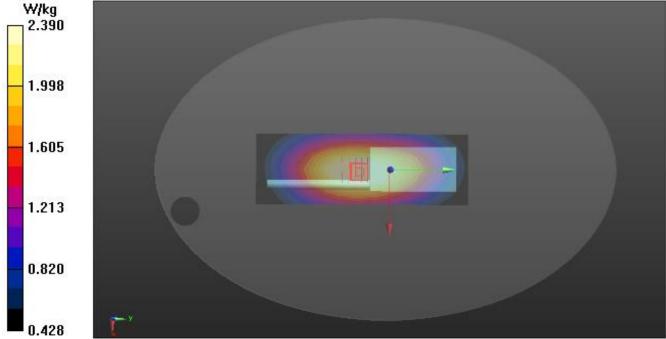
**Configuration 2/A-12.5K-FACE UP-15/Area Scan (7x19x1):** Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 2.58 W/kg

Configuration 2/A-12.5K-FACE UP-15/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

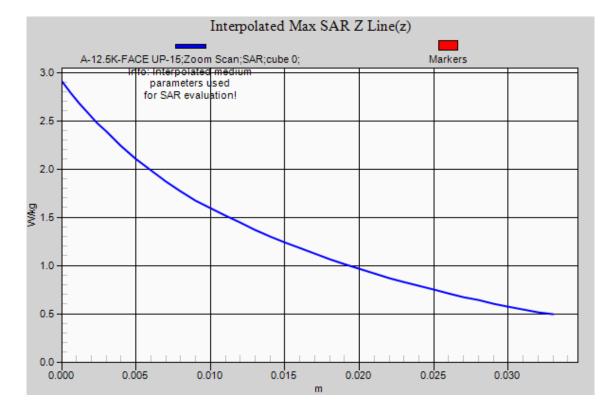
Reference Value = 57.884 V/m; Power Drift = -0.23 dB Peak SAR (extrapolated) = 2.91 W/kg

SAR(1 g) = 2.15 W/kg; SAR(10 g) = 1.62 W/kg

Maximum value of SAR (measured) = 2.39 W/kg









# Test Laboratory: AGC Lab 450 Low -Body –Touch (12.5 KHz) DUT: GMRS Two way radio; Type: UV-9G

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 462.5500 MHz; Medium parameters used: f = 450 MHz;  $\sigma$ = 0.85 mho/m;  $\epsilon$ r =43.05;  $\rho$ = 1000 kg/m; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

DASY Configuration:

- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- 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/A-12.5K-BACK-15/Area Scan (7x19x1):** Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 2.31 W/kg

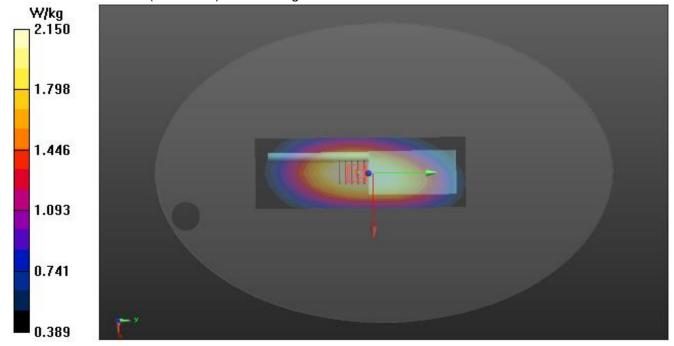
Configuration/A-12.5K-BACK-15/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 55.299 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 2.64 W/kg

SAR(1 g) = 1.93 W/kg; SAR(10 g) = 1.45 W/kg

Maximum value of SAR (measured) = 2.15 W/kg





# Test Laboratory: AGC Lab 450 Mid -Body –Touch (12.5 KHz) DUT: GMRS Two way radio; Type: UV-9G

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 462.6500 MHz; Medium parameters used: f = 450 MHz;  $\sigma$ = 0.85 mho/m;  $\epsilon$ r =43.05;  $\rho$ = 1000 kg/m; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

DASY Configuration:

- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- 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/A-12.5K-BACK-19/Area Scan (7x19x1):** Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 2.05 W/kg

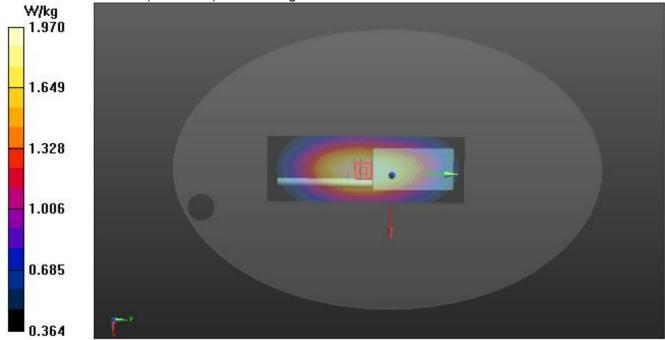
Configuration/A-12.5K-BACK-19/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 49.933 V/m; Power Drift = -0.61 dB

Peak SAR (extrapolated) = 2.42 W/kg

# SAR(1 g) = 1.77 W/kg; SAR(10 g) = 1.33 W/kg

Maximum value of SAR (measured) = 1.97 W/kg





467.5500-467.7250MHz (4W) Test Laboratory: AGC Lab 450 Mid- Face up 2.5cm (12.5 KHz) DUT: GMRS Two way radio; Type: UV-9G

Date: Aug. 19, 2022

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 467.6500 MHz; Medium parameters used: f = 450MHz;  $\sigma$ = 0.87 mho/m;  $\epsilon$ r =42.64;  $\rho$ = 1000 kg/m<sup>3</sup>; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

DASY Configuration:

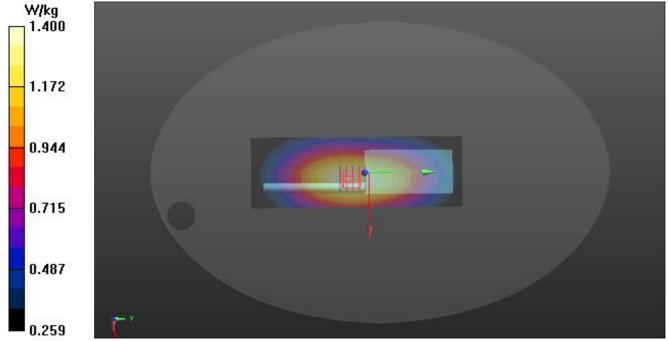
- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

**Configuration 2/A-12.5K-FACE UP-27/Area Scan (7x19x1):** Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 1.42 W/kg

Configuration 2/A-12.5K-FACE UP-27/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 40.422 V/m; Power Drift = -0.53 dB Peak SAR (extrapolated) = 1.71 W/kg SAR(1 g) = 1.26 W/kg; SAR(10 g) = 0.943 W/kg

Maximum value of SAR (measured) = 1.40 W/kg





# Test Laboratory: AGC Lab 450 Mid -Body –Touch (12.5 KHz) DUT: GMRS Two way radio; Type: UV-9G

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 467.6500MHz; Medium parameters used: f = 450 MHz;  $\sigma$ = 0.87 mho/m;  $\epsilon$ r =42.64;  $\rho$ = 1000 kg/m; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

DASY Configuration:

- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- 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/A-12.5K-BACK-27/Area Scan (7x19x1):** Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 1.62 W/kg

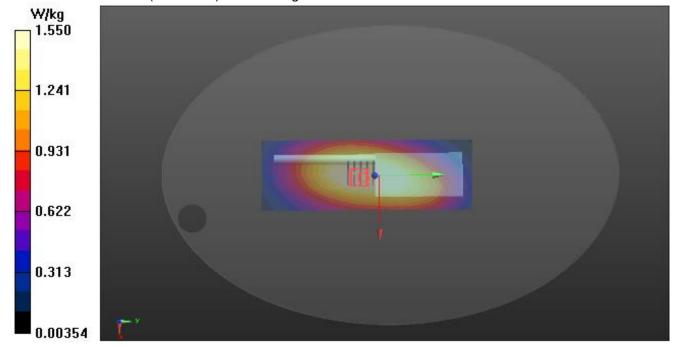
Configuration/A-12.5K-BACK-27/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 47.828 V/m; Power Drift = -0.40 dB

Peak SAR (extrapolated) = 3.64 W/kg

# SAR(1 g) = 1.94 W/kg; SAR(10 g) = 1.03 W/kg

Maximum value of SAR (measured) = 1.55 W/kg





#### 462.5625-462.7125MHz (4W) Test Laboratory: AGC Lab 450 Mid- Face up 2.5cm (25 KHz) DUT: GMRS Two way radio; Type: UV-9G

Date: Aug. 19, 2022

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 462.6375 MHz; Medium parameters used: f = 450MHz;  $\sigma$ = 0.85 mho/m;  $\epsilon$ r =43.05;  $\rho$ = 1000 kg/m<sup>3</sup>; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

DASY Configuration:

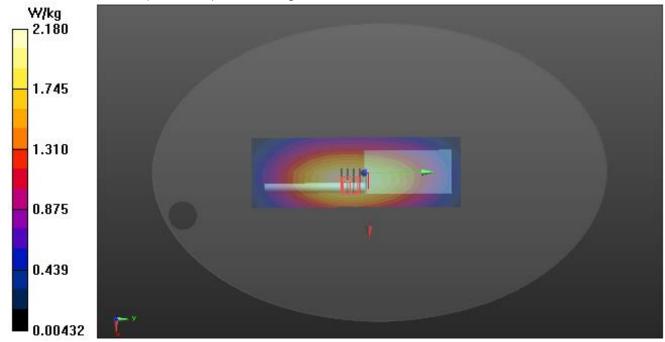
- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

**Configuration 2/A-25K-FACE UP-4/Area Scan (7x19x1):** Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 2.22 W/kg

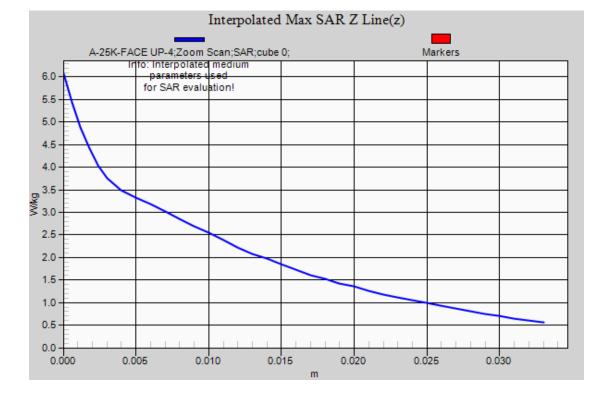
Configuration 2/A-25K-FACE UP-4/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 48.807 V/m; Power Drift = -0.29 dB Peak SAR (extrapolated) = 6.07 W/kg SAR(1 g) = 2.68 W/kg; SAR(10 g) = 1.14 W/kg

Maximum value of SAR (measured) = 2.18 W/kg









# Test Laboratory: AGC Lab 450 High -Body –Touch (25 KHz) DUT: GMRS Two way radio; Type: UV-9G

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 462.7125MHz; Medium parameters used: f = 450 MHz;  $\sigma$ = 0.85 mho/m;  $\epsilon$ r =43.05;  $\rho$ = 1000 kg/m; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

DASY Configuration:

- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- 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)

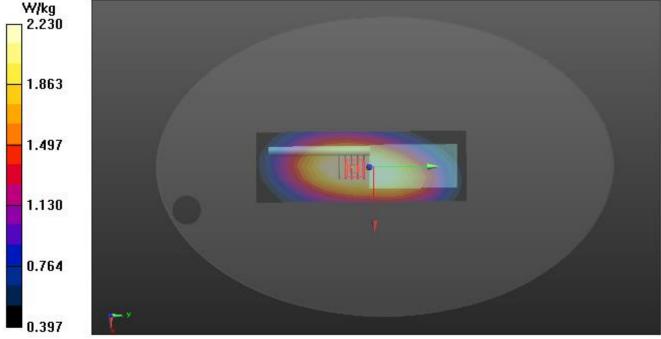
**Configuration/A-25K-BACK-7/Area Scan (7x19x1):** Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 2.47 W/kg

**Configuration/A-25K-BACK-7/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 56.290 V/m; Power Drift = -0.33 dB

Peak SAR (extrapolated) = 2.73 W/kg

SAR(1 g) = 2 W/kg; SAR(10 g) = 1.5 W/kg

Maximum value of SAR (measured) = 2.23 W/kg





#### 462.5500-462.7250MHz (4W) Test Laboratory: AGC Lab 450 Mid- Face up 2.5cm (25 KHz) DUT: GMRS Two way radio; Type: UV-9G

Date: Aug. 19, 2022

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 462.6500 MHz; Medium parameters used: f = 450MHz;  $\sigma$ = 0.85 mho/m;  $\epsilon$ r =43.05;  $\rho$ = 1000 kg/m<sup>3</sup>; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

DASY Configuration:

- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- 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)

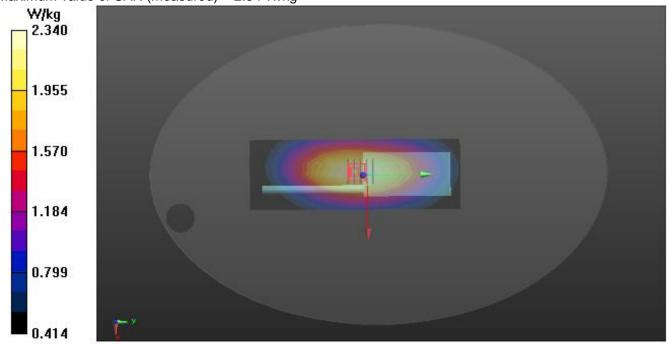
**Configuration 2/A-25K-FACE UP-19/Area Scan (7x19x1):** Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 2.34 W/kg

Configuration 2/A-25K-FACE UP-19/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 51.793 V/m; Power Drift = -0.14 dB Peak SAR (extrapolated) = 2.89 W/kg

SAR(1 g) = 2.1 W/kg; SAR(10 g) = 1.56 W/kg

Maximum value of SAR (measured) = 2.34 W/kg





# Test Laboratory: AGC Lab 450 Low -Body –Touch (25 KHz) DUT: GMRS Two way radio; Type: UV-9G

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 462.5500 MHz; Medium parameters used: f = 450 MHz;  $\sigma$ = 0.85 mho/m;  $\epsilon$ r =43.05;  $\rho$ = 1000 kg/m; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

DASY Configuration:

- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- 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/A-25K-BACK-15/Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.54 W/kg

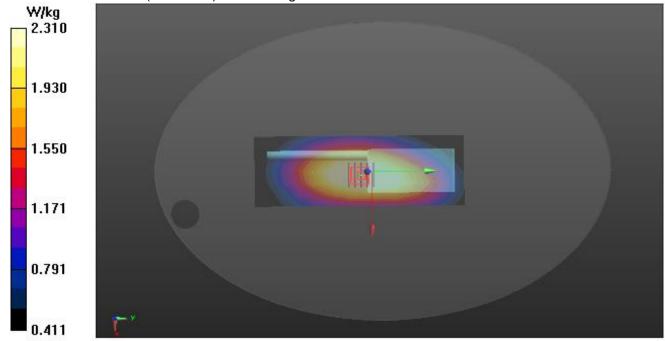
Configuration/A-25K-BACK-15/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 57.651 V/m; Power Drift = -0.27 dB

Peak SAR (extrapolated) = 2.85 W/kg

# SAR(1 g) = 2.07 W/kg; SAR(10 g) = 1.56 W/kg

Maximum value of SAR (measured) = 2.31 W/kg





#### 467.5500-467.7250MHz (4W) Test Laboratory: AGC Lab 450 Mid- Face up 2.5cm (25 KHz) DUT: GMRS Two way radio; Type: UV-9G

Date: Aug. 19, 2022

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 467.6500 MHz; Medium parameters used: f = 450MHz;  $\sigma$ = 0.87 mho/m;  $\epsilon$ r =42.64;  $\rho$ = 1000 kg/m<sup>3</sup>; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

DASY Configuration:

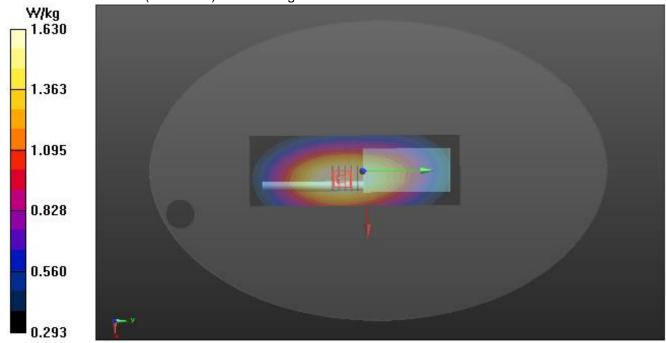
- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

**Configuration 2/A-25K-FACE UP-27/Area Scan (7x19x1):** Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 1.76 W/kg

Configuration 2/A-25K-FACE UP-27/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 45.280 V/m; Power Drift = -0.11 dB Peak SAR (extrapolated) = 2.00 W/kg SAR(1 g) = 1.46 W/kg; SAR(10 g) = 1.09 W/kg

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





# Test Laboratory: AGC Lab 450 Mid -Body –Touch (25 KHz) DUT: GMRS Two way radio; Type: UV-9G

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 467.6500 MHz; Medium parameters used: f = 450 MHz;  $\sigma$ = 0.87 mho/m;  $\epsilon$ r =42.64;  $\rho$ = 1000 kg/m; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

#### DASY Configuration:

- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- 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/A-25K-BACK-27/Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.42 W/kg

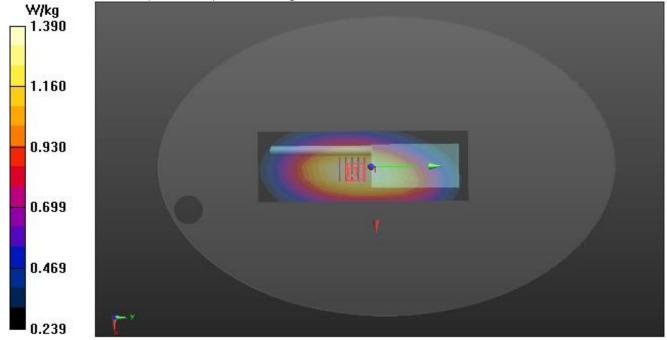
Configuration/A-25K-BACK-27/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 39.249 V/m; Power Drift = -0.62 dB

Peak SAR (extrapolated) = 1.71 W/kg

# SAR(1 g) = 1.25 W/kg; SAR(10 g) = 0.938 W/kg

Maximum value of SAR (measured) = 1.39 W/kg





Repeated SAR 462.5500-462.7250MHz (4W) Test Laboratory: AGC Lab 450 Low- Face up 2.5cm (12.5 KHz) DUT: GMRS Two way radio; Type: UV-9G

Date: Aug. 19, 2022

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 462.5500MHz; Medium parameters used: f = 450MHz;  $\sigma$ = 0.85 mho/m;  $\epsilon$ r =43.05;  $\rho$ = 1000 kg/m<sup>3</sup>; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

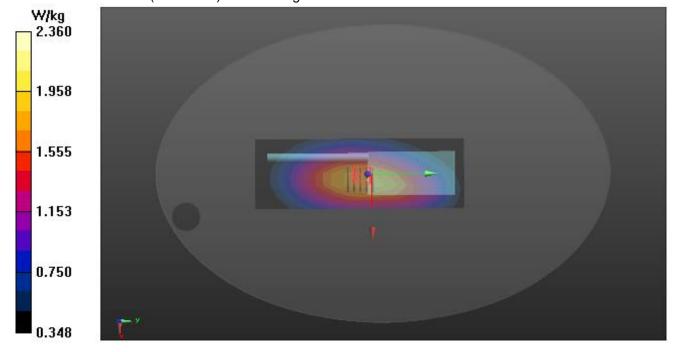
DASY Configuration:

- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- 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/A-12.5K-BACK-15-REPEAT/Area Scan (7x19x1):** Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 1.92 W/kg

**Configuration/A-12.5K-BACK-15-REPEAT/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 47.311 V/m; Power Drift = -0.23 dB Peak SAR (extrapolated) = 2.95 W/kg SAR(1 g) = 2.13 W/kg; SAR(10 g) = 1.56 W/kg Maximum value of SAR (measured) = 2.36 W/kg





#### 462.5625-462.7125MHz (4W) Test Laboratory: AGC Lab 450 Mid- Face up 2.5cm (25 KHz) DUT: GMRS Two way radio; Type: UV-9G

Date: Aug. 19, 2022

Communication System: 450; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Frequency: 462.6375 MHz; Medium parameters used: f = 450MHz;  $\sigma$ = 0.85 mho/m;  $\epsilon$ r =43.05;  $\rho$ = 1000 kg/m<sup>3</sup>; Phantom Type: Elliptical Phantom Ambient temperature (°C): 22.1, Liquid temperature (°C): 21.8

DASY Configuration:

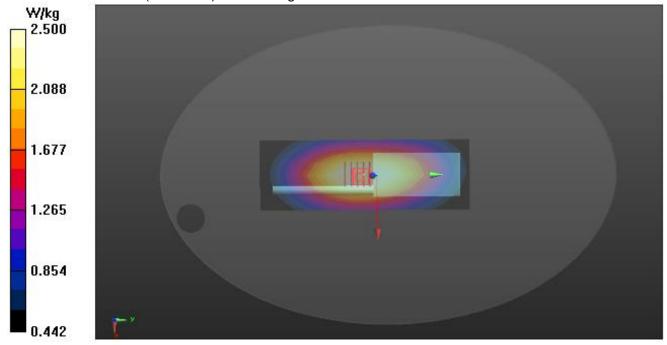
- Probe: ES3DV3 SN3337; ConvF(7.15, 7.15, 7.15); Calibrated: Aug. 24, 2021;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = 1.0,
- Electronics: DAE4 SN1398; Calibrated: May 17, 2022
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1108
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

**Configuration 2/A-25K-FACE UP-4-Repeat/Area Scan (7x19x1):** Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 2.73 W/kg

Configuration 2/A-25K-FACE UP-4-Repeat/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 47.573 V/m; Power Drift = -0.45 dB Peak SAR (extrapolated) = 3.09 W/kg SAR(1 g) = 2.25 W/kg; SAR(10 g) = 1.69 W/kg

Maximum value of SAR (measured) = 2.50 W/kg

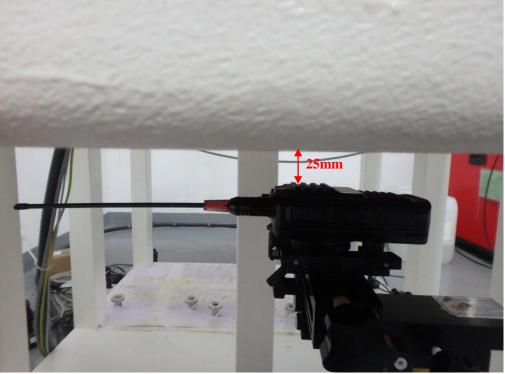




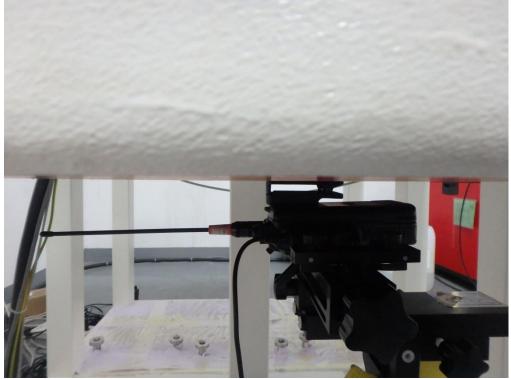
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# **APPENDIX C. TEST SETUP PHOTOGRAPHS**

Face Up with 2.5 cm Separation Distance.



Body Back Touch with all accessories



The thickness of EUT is 3.3cm

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

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 Web: http://www.agccert.com/



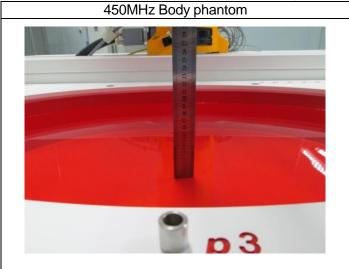


Note : The headset is just for testing. This tested and electrically similar headsets may be used.



# DEPTH OF THE LIQUID IN THE PHANTOM-ZOOM IN

Note: The position used in the measurement was according to IEEE 1528-2013





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# APPENDIX D. CALIBRATION DATA

Refer to Attached files.

----END OF REPORT----



# Conditions of Issuance of Test Reports

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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.