NVLAP TESTING
LABORATORY CODE 600341-0

BACL Bay Area Compliance Labs Corp.

FCC SAR TEST REPORT

Applicant: **Axiom Distribution Solutions**

Address: **1320 Arroyo Grande California United States 93420**

Product Name: **Digital Portable Radio**

FCC ID: **2ATTQAXP5X5V**

Standard(s): **47 CFR Part 2(2.1093)**

Report Number: **SZ1240117-04046E-20**

Report Date: **2024/3/15**

The above device has been tested and found compliant with the requirement of the relative standards by Bay Area Compliance Laboratories Corp. (Dongguan).

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Brave Lu

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SAR TEST RESULTS SUMMARY

Mode	Model	Max. Reported SAR Level(s) (W/kg)		Limit (W/kg)
PTT(136-174MHz)	AXP595 VHF	1g Head SAR	**0.58**	**8.0**
		1g Body SAR	**1.71**	
	AXP565 VHF	1g Head SAR	0.54	
		1g Body SAR	1.54	
	AXP505 VHF	1g Head SAR	0.42	
		1g Body SAR	1.65	
Applicable Standards	**FCC 47 CFR part 2.1093** Radiofrequency radiation exposure evaluation: portable devices			
	IEC/IEEE 62209-1528:2020 Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Part 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz)			
	KDB procedures KDB 447498 D01 General RF Exposure Guidance v06 KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04 KDB 865664 D02 RF Exposure Reporting v01r02 KDB 643646 D01 SAR Test for PTT Radios v01r03			
Note: This wireless device has been shown to be capable of compliance for localized specific absorption rate (SAR) for Occupational/Controlled Exposure limits specified in **FCC 47 CFR part 2.1093** and has been tested in accordance with the measurement procedures specified in IEC/IEEE 62209-1528:2020 and RF exposure KDB procedures. **The results and statements contained in this report pertain only to the device(s) evaluated.**				

CONTENTS

DOCUMENT REVISION HISTORY ····· 5
1. GENERAL INFORMATION ····· 6
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) ····· 6
2. REFERENCE, STANDARDS, AND GUIDELINES ····· 7
2.1 SAR LIMITS ····· 7
2.2 TEST FACILITY ····· 8
3. DESCRIPTION OF TEST SYSTEM ····· 9
Recommended Tissue Dielectric Parameters for Head liquid ····· 13
4. EQUIPMENT LIST AND CALIBRATION ····· 14
4.1 EQUIPMENTS LIST & CALIBRATION INFORMATION ····· 14
5. SAR MEASUREMENT SYSTEM VERIFICATION ····· 15
5.1 LIQUID VERIFICATION ····· 15
5.2 LIQUID VERIFICATION RESULTS ····· 15
5.3 SYSTEM ACCURACY VERIFICATION ····· 16
5.4 SYSTEM ACCURACY CHECK RESULTS ····· 16
5.5 SAR SYSTEM VALIDATION DATA ····· 17
6. EUT TEST STRATEGY AND METHODOLOGY ····· 18
6.1 TEST POSITIONS FOR FRONT-OF-FACE CONFIGURATIONS ····· 18
6.2 TEST POSITIONS FOR BODY-WORN AND OTHER CONFIGURATIONS ····· 19
6.3 TEST DISTANCE FOR SAR EVALUATION ····· 19
6.4 SAR EVALUATION PROCEDURE ····· 20
7. CONDUCTED OUTPUT POWER MEASUREMENT ····· 21
7.1 TEST PROCEDURE ····· 21
7.2 MAXIMUM TARGET OUTPUT POWER ····· 21
7.4 TEST RESULTS: ····· 22
8. STANDALONE SAR TEST EXCLUSION CONSIDERATIONS ····· 24
8.1 ANTENNAS LOCATION: ····· 24
9. SAR MEASUREMENT RESULTS ····· 25
9.1 SAR TEST DATA ····· 25
10. MEASUREMENT VARIABILITY ····· 28
11.SAR Plots ····· 29
APPENDIX A - MEASUREMENT UNCERTAINTY ····· 41
APPENDIX B - EUT TEST POSITION PHOTOS ····· 42

APPENDIX C - PROBE CALIBRATION CERTIFICATES ····· 46
APPENDIX D - DIPOLE CALIBRATION CERTIFICATES ····· 47

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	SZ1240117-04046E-20	Original Report	2024/3/15

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	Digital Portable Radio	
EUT Model:	AXP595 VHF	
Multiple Models:	AXP565 VHF, AXP505 VHF	
Device Type:	Portable	
Exposure Category:	Occupational/Controlled Exposure	
Antenna Type(s):	External Antenna	
Body-Worn Accessories:	Belt Clip	
Face-Head Accessories:	None	
Operation Mode :	PTT_FM, PTT_4FSK	
Frequency Band:	PTT_FM/PTT_4FSK: 136-174 MHz	
Conducted RF Power:	AXP595 VHF	PTT_FM/PTT_4FSK: 37.72 dBm
	AXP565 VHF	PTT_FM/PTT_4FSK: 37.75 dBm
	AXP505 VHF	PTT_FM/PTT_4FSK: 37.67 dBm
Rated Input Voltage:	DC7.4V from Rechargeable Battery	
Serial Number:	AXP595 VHF :2GRW-1 AXP565 VHF :2GRW-2 AXP505 VHF :2GRW-3	
Normal Operation:	Head and Body Worn	
EUT Received Date:	2024/01/17	
Test Date:	2024/02/05	
EUT Received Status:	Good	
Note: The Multiple models are electrically identical with the test model. Please refer to the declaration letter for more detail, which was provided by manufacturer.		

2. REFERENCE, STANDARDS, AND GUIDELINES

FCC:

The Report and Order requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 1.6 mW/g as recommended by the ANSI/IEEE standard C95.1-1992 [6] for an uncontrolled environment (Paragraph 65). According to the Supplement C of OET Bulletin 65 “Evaluating Compliance with FCC Guide-lines for Human Exposure to Radio frequency Electromagnetic Fields", released on Jun 29, 2001 by the FCC, the device should be evaluated at maximum output power (radiated from the antenna) under “worst-case” conditions for normal or intended use, incorporating normal antenna operating positions, device peak performance frequencies and positions for maximum RF energy coupling.

This report describes the methodology and results of experiments performed on wireless data terminal. The objective was to determine if there is RF radiation and if radiation is found, what is the extent of radiation with respect to safety limits. SAR (Specific Absorption Rate) is the measure of RF exposure determined by the amount of RF energy absorbed by human body (or its parts) – to determine how the RF energy couples to the body or head which is a primary health concern for body worn devices. The limit below which the exposure to RF is considered safe by regulatory bodies in North America is 1.6 mW/g average over 1 gram of tissue mass.

2.1 SAR Limits

FCC Limit

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average (averaged over the whole body)	0.08	0.4
Spatial Peak (averaged over any 1 g of tissue)	1.60	**8.0**
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.0	20.0

Population/Uncontrolled Environments are defined as locations where there is the exposure of individual who have no knowledge or control of their exposure.

Occupational/Controlled Environments are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).

Occupational/Controlled environments Spatial Peak limit 8.0W/kg (FCC) applied to the EUT.

2.2 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 829273, the FCC Designation No. : CN5044.

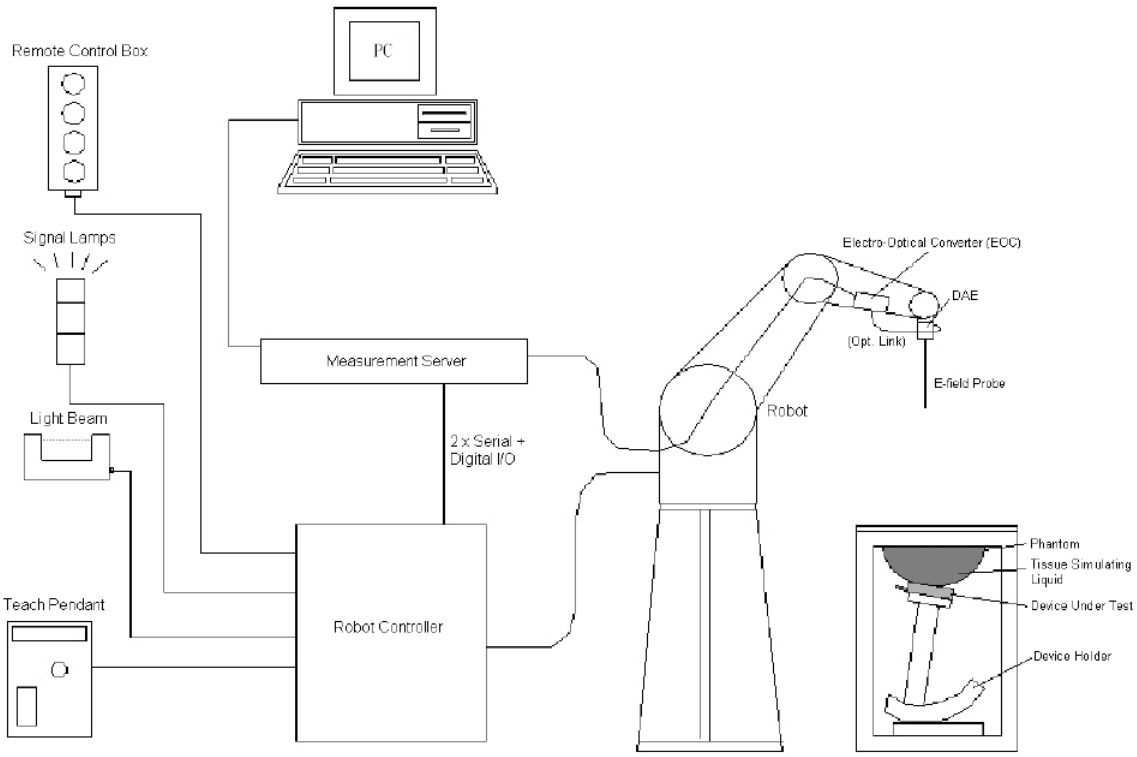
The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

3. DESCRIPTION OF TEST SYSTEM

These measurements were performed with the automated near-field scanning system DASY5 from Schmid & Partner Engineering AG (SPEAG) which is the Fifth generation of the system shown in the figure hereinafter:

DASY5 System Description

The DASY5 system for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal application, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- 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.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win7 professional operating system and the DASY52 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

DASY5 Measurement Server

The DASY5 measurement server is based on a PC/104 CPU board with a 400MHz Intel ULV Celeron, 128MB chip-disk and 128MB RAM. The necessary circuits for communication with the DAE4 (or DAE3) electronics box, as well as the 16 bit AD-converter system for optical detection and digital I/O interface are contained on the DASY5 I/O board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all real-time data evaluation of field measurements and surface detection, controls robot movements and handles safety operation. The PC operating system cannot interfere with these time critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program-controlled robot movements. Furthermore, the measurement server is equipped with an expansion port which is reserved for future applications. Please note that this expansion port does not have a standardized point out, and therefore only devices provided by SPEAG can be connected. Devices from any other supplier could seriously damage the measurement server.

Data Acquisition Electronics

The data acquisition electronics (DAE4) 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.

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.

The input impedance of both the DAE4 as well as of the DAE3 box is 200MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

EX3DV4 E-Field Probes

Frequency	4 MHz – 10 GHz Linearity: ± 0.2 dB (30 MHz – 10 GHz)
Directivity(typical)	± 0.1 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g – > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Applications	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.
Compatibility	DASY3, DASY4, DASY52, DASY6, DASY8, EASY6, EASY4/MRI

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 6 mm). The phantom has three measurement areas:
_ Left Head
_ Right Head
_ Flat phantom

The phantom table for the DASY systems based on the robots have the size of 100 x 50 x 85 cm (L x W x H).
For easy dislocation these tables have fork lift cut outs at the bottom.
The bottom plate contains three pairs of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. Only one device holder is necessary if two phantoms are used (e.g., for different liquids)

A white cover is provided to cover the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. Free space scans of devices on top of this phantom cover are possible. Three reference marks are provided on the phantom counter. These reference marks are used to teach the absolute phantom position relative to the robot.

Robots

The DASY5 system uses the high precision industrial robot. The robot offers the same features important for our application:

- High precision (repeatability 0.02mm)
- High reliability (industrial design)
- Low maintenance costs (virtually maintenance free due to direct drive gears; no belt drives)
- Jerk-free straight movements (brushless synchrony motors; no stepper motors)
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)

The above mentioned robots are controlled by the Staubli CS7MB robot controllers. All information regarding the use and maintenance of the robot arm and the robot controller is contained on the CDs delivered along with the robot. Paper manuals are available upon request direct from Staubli.

Area Scans

Area scans are defined prior to the measurement process being executed with a user defined variable spacing between each measurement point (integral) allowing low uncertainty measurements to be conducted. Scans defined for FCC applications utilize a 15mm 2 step integral, with 1.5mm interpolation used to locate the peak SAR area used for zoom scan assessments.

Where the system identifies multiple SAR peaks (which are within 25% of peak value) the system will provide the user with the option of assessing each peak location individually for zoom scan averaging.

Zoom Scan (Cube Scan Averaging)

The averaging zoom scan volume utilized in the DASY5 software is in the shape of a cube and the side dimension of a 1 g or 10 g mass is dependent on the density of the liquid representing the simulated tissue. A density of 1000 kg/m^3 is used to represent the head and body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1g cube is 10mm,with the side length of the 10g cube is 21.5mm.

When the cube intersects with the surface of the phantom, it is oriented so that 3 vertices touch the surface of the shell or the center of a face is tangent to the surface. The face of the cube closest to the surface is modified in order to conform to the tangent surface.

The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications (including FCC) utilize a physical step of 7 x7 x 7 (5mmx5mmx5mm) providing a volume of 30 mm in the X & Y & Z axis.

Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEC/IEEE 62209-1528:2020

Recommended Tissue Dielectric Parameters for Head liquid

Table 2 – Dielectric properties of the tissue-equivalent medium

Frequency MHz	Real part of the complex relative permittivity, ε_r'	Conductivity, σ S/m	Penetration depth (E-field), δ mm
4	*55,0*	*0,75*	293,0
13	*55,0*	*0,75*	165,5
30	55,0	0,75	112,8
150	52,3	0,76	62,0
300	45,3	0,87	46,1
450	43,5	0,87	43,0
750	*41,9*	*0,89*	39,8
835	41,5	0,90	39,0
900	41,5	0,97	36,2
1 450	40,5	1,20	28,6
1 800	40,0	1,40	24,3
1 900	40,0	1,40	24,3
1 950	40,0	1,40	24,3
2 000	40,0	1,40	24,3
2 100	*39,8*	*1,49*	22,8
2 450	39,2	1,80	18,7
2 600	*39,0*	*1,96*	17,2
3 000	38,5	2,40	14,0
3 500	*37,9*	*2,91*	11,4
4 000	*37,4*	*3,43*	10,0
4 500	*36,8*	*3,94*	9,7
5 000	*36,2*	*4,45*	1,5
5 200	*36,0*	*4,66*	8,4
5 400	*35,8*	*4,86*	8,1
5 600	*35,5*	*5,07*	7,5
5 800	35,3	5,27	7,3
6 000	*35,1*	*5,48*	7,0
6 500	*34,5*	*6,07*	6,7
7 000	*33,9*	*6,65*	6,4
7 500	*33,3*	*7,24*	6,1
8 000	*32,7*	*7,84*	5,9
8 500	*32,1*	*8,46*	5,3
9 000	*31,6*	*9,08*	4,8
9 500	*31,0*	*9,71*	4,4
10 000	*30,4*	*10,40*	4,0

NOTE For convenience, permittivity and conductivity values are linearly interpolated for frequencies that are not a part of the original data from Drossos et al. [2]. They are shown in italics in Table 2. The italicized values are linearly interpolated (below 5800 MHz) or extrapolated (above 5800 MHz) from the non-italicized values that are immediately above and below these values.

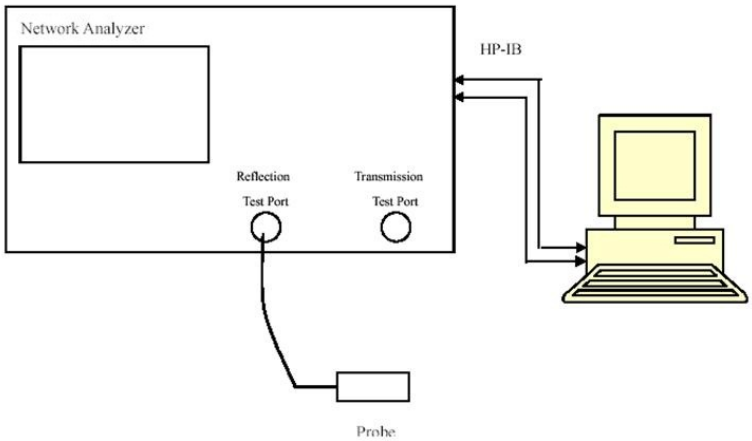
4. EQUIPMENT LIST AND CALIBRATION

4.1 Equipments List & Calibration Information

Equipment	Model	S/N	Calibration Date	Calibration Due Date
DASY5 Test Software	DASY52.10	N/A	NCR	NCR
DASY5 Measurement Server	DASY5 4.5.12	1470	NCR	NCR
Data Acquisition Electronics	DAE4	772	2024/1/23	2025/1/22
E-Field Probe	EX3DV4	3801	2023/6/23	2024/6/22
Mounting Device	MD4HHTV5	SD 000 H01 KA	NCR	NCR
Oval Flat Phantom	ELI V8.0	2051	NCR	NCR
CLA150	Loop, 150 MHz	4008	2023/3/21	2026/3/20
Simulated Tissue 150 MHz Head	TS-150-H	2309015001	Each Time	/
Network Analyzer	8753C	3033A02857	2023/11/18	2024/11/17
Dielectric assessment kit	1253	SM DAK 040 CA	NCR	NCR
synthesized signal generator	8665B	3438a00584	2023/10/18	2024/10/17
EPM Series Power Meter	E4419B	MY45103907	2023/10/18	2024/10/17
Power Amplifier	ZHL-5W-202-S+	416402204	NCR	NCR
Directional Coupler	441493	520Z	NCR	NCR
Attenuator	20dB, 100W	LN749	NCR	NCR
Attenuator	6dB, 150W	2754	NCR	NCR
Thermometer	DTM3000	3635	2023/8/11	2024/8/10
Spectrum Analyzer	FSV40	101589	2023/10/11	2024/10/10

5. SAR MEASUREMENT SYSTEM VERIFICATION

5.1 Liquid Verification



5.2 Liquid Verification Results

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	σ (S/m)	ε_r	σ (S/m)	$\Delta\varepsilon_r$	Δσ (S/m)	
130	Simulated Tissue 150 MHz Head	52.864	0.738	52.75	0.76	0.22	-2.89	±5
140	Simulated Tissue 150 MHz Head	52.579	0.746	52.53	0.76	0.09	-1.84	±5
150	Simulated Tissue 150 MHz Head	52.275	0.754	52.3	0.76	-0.05	-0.79	±5
160	Simulated Tissue 150 MHz Head	52.031	0.761	51.83	0.77	0.39	-1.17	±5
170	Simulated Tissue 150 MHz Head	51.833	0.767	51.37	0.77	0.9	-0.39	±5
180	Simulated Tissue 150 MHz Head	51.568	0.775	50.9	0.78	1.31	-0.64	±5

**Liquid Verification above was performed on 2024/02/05.*

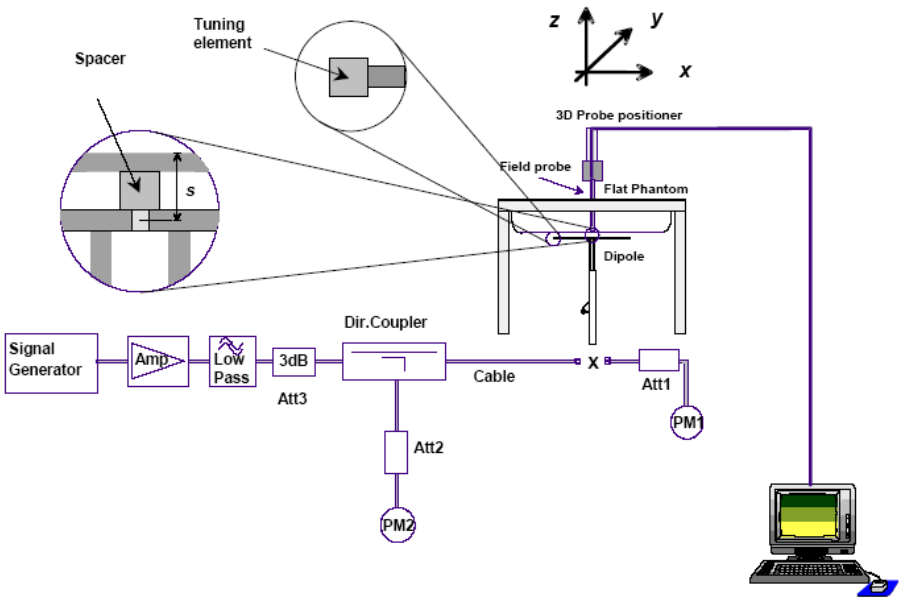
5.3 System Accuracy Verification

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

The spacing distances in the **System Verification Setup Block Diagram** is given by the following:

a) s = 15 mm ± 0,2 mm for 300 MHz ≤ f ≤ 1 000 MHz;
b) s = 10 mm ± 0,2 mm for 1 000 MHz < f ≤ 3 000 MHz;
c) s = 10 mm ± 0,2 mm for 3 000 MHz < f ≤ 6 000 MHz.
d) s = 0 mm for f = 150 MHz(Loop Antenna).

System Verification Setup Block Diagram



5.4 System Accuracy Check Results

Date	Frequency Band	Liquid Type	Input Power (mW)	Measured SAR (W/kg)		Target Value (W/kg)	Delta (%)	Tolerance (%)
2024/02/05	150 MHz	Simulated Tissue 150 MHz Head	1000	1g	3.84	3.96	-3.03	±10

5.5 SAR SYSTEM VALIDATION DATA

System Performance 150MHz Head

DUT: CLA-150; Type: CLA-150; Serial: 4008

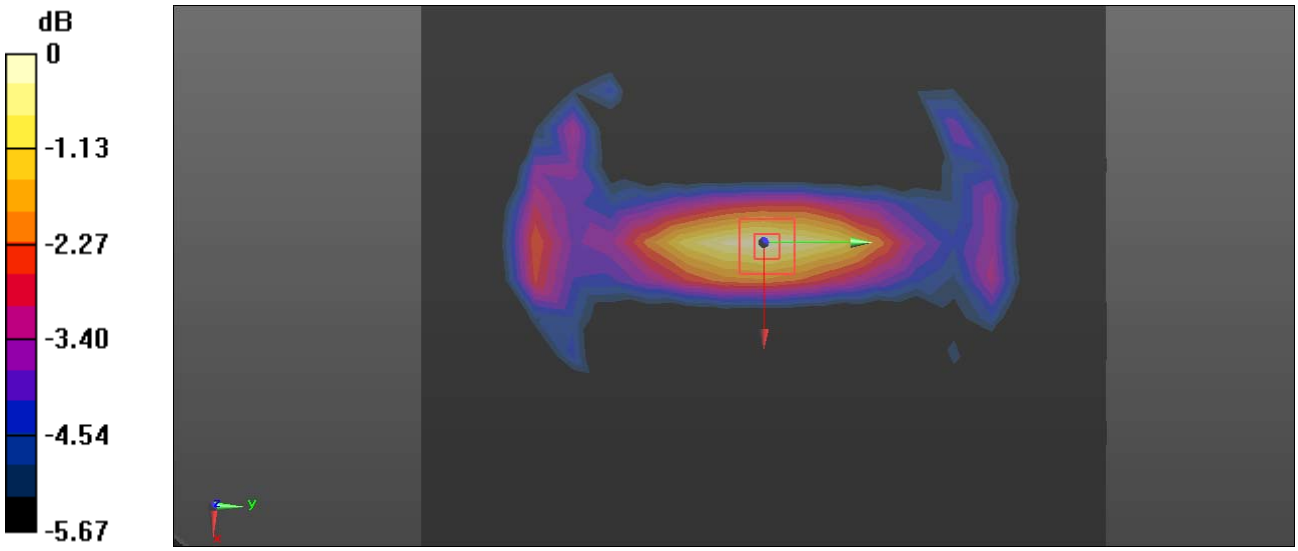
Communication System: CW; Frequency: 150 MHz;Duty Cycle: 1:1
Medium parameters used: f = 150 MHz; σ = 0.754 S/m; ε_r = 52.275; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3801; ConvF(11.02, 11.02, 11.02) @ 150 MHz; Calibrated: 2023/6/23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: ELI v8.0; Type: QDOVA002AA; Serial: TP:2051
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (19x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 4.14 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 57.68 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 5.07 W/kg
SAR(1 g) = 3.84 W/kg; SAR(10 g) = 2.59 W/kg
Maximum value of SAR (measured) = 4.02 W/kg

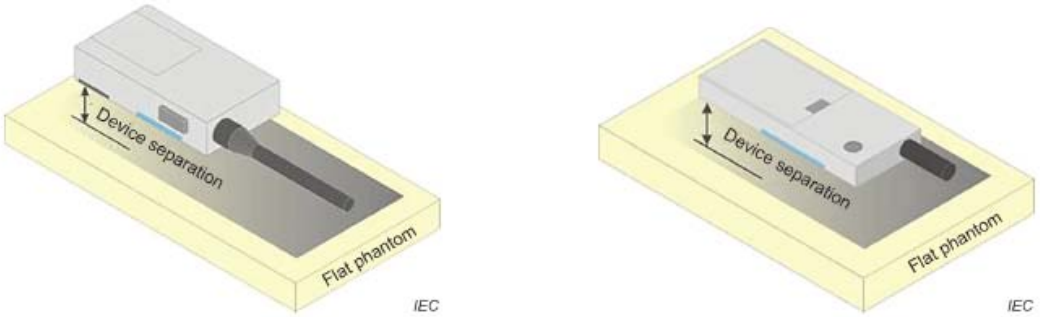


0 dB = 4.02 W/kg = 6.04 dBW/kg

6. EUT TEST STRATEGY AND METHODOLOGY

6.1 Test positions for Front-of-face configurations

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. A phantom shell thickness of 2 mm is required. When the front of the radio has a contour or non-uniform surface with a variation of 1.0 cm or more, the average distance of such variations is used to establish the 2.5 cm test separation from the phantom.



b) Two-way radios

Figure 10 – Test positions for front-of-face devices

6.2 Test positions for body-worn and other configurations

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations. Devices with a headset output should be tested with a headset connected to the device. When multiple accessories that do not contain metallic components are supplied with the device, the device may be tested with only the accessory that dictates the closest spacing to the body. When multiple accessories that contain metallic components are supplied with the device, the device must be tested with each accessory that contains a unique metallic component. If multiple accessories share an identical metallic component (e.g., the same metallic belt-clip used with different holsters with no other metallic components), only the accessory that dictates the closest spacing to the body must be tested.

Body-worn accessories may not always be supplied or available as options for some devices that are intended to be authorized for body-worn use. A separation distance of 1.5 cm between the back of the device and a flat phantom is recommended for testing body-worn SAR compliance under such circumstances. Other separation distances may be used, but they should not exceed 2.5 cm. In these cases, the device may use body-worn accessories that provide a separation distance greater than that tested for the device provided however that the accessory contains no metallic components.

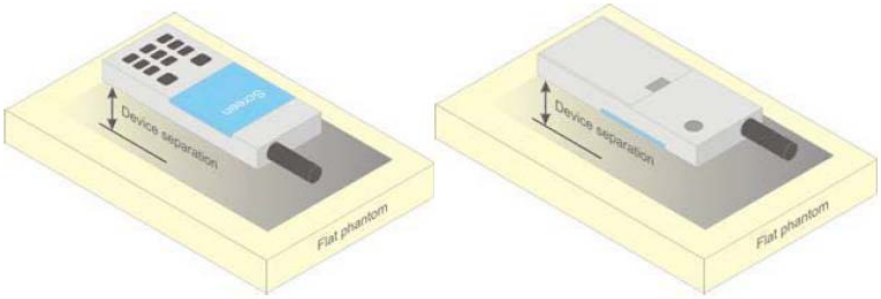


Figure 5 – Test positions for body-worn devices

6.3 Test Distance for SAR Evaluation

In this case the DUT(Device Under Test) is set directly against the phantom, the test distance is 0mm for Body Back mode; for Face Up mode the distance is 25mm.

6.4 SAR Evaluation Procedure

The evaluation was performed with the following procedure:

Step 1: Measurement of the SAR value at a fixed location above the ear point or central position was used as a reference value for assessing the power drop. The SAR at this point is measured at the start of the test and then again at the end of the testing.

Step 2: The SAR distribution at the exposed side of the head was measured at a distance of 4 mm from the inner surface of the shell. The area covered the entire dimension of the head or radiating structures of the EUT, the horizontal grid spacing was 15 mm x 15 mm, and the SAR distribution was determined by integrated grid of 1.5mm x 1.5mm. Based on these data, the area of the maximum absorption was determined by spline interpolation. The first Area Scan covers the entire dimension of the EUT to ensure that the hotspot was correctly identified.

Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7x 7 x 7 points. On the basis of this data set, the spatial peak SAR value was evaluated under the following procedure:

1) The data at the surface were extrapolated, since the center of the dipoles is 1.2 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.

2) The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed by the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one dimensional splines with the “Not a knot"-condition (in x, y and z-directions). The volume was integrated with the trapezoidal-algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the averages.

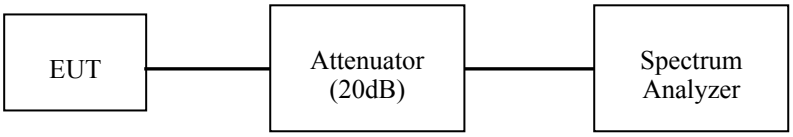
All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

Step 4: Re-measurement of the SAR value at the same location as in Step 1. If the value changed by more than 5%, the evaluation was repeated.

7. CONDUCTED OUTPUT POWER MEASUREMENT

7.1 Test Procedure

The RF output of the transmitter was connected to the input of the Spectrum Analyzer through sufficient attenuation.



The Spectrum Analyzer setting:

RBW	VBW
100 kHz	300 kHz

7.2 Maximum Target Output Power

Mode		Max. tune-up tolerance power limit for Production(dBm)
PTT(136-174MHz)	FM_12.5kHz	37.78
	4FSK_12.5kHz	37.78

7.4 Test Results:

AXP595 VHF:

Test Mode		Frequency (MHz)	Output Power(dBm)	Power level
PTT (136-174MHz)	FM 12.5 kHz	136.0125	37.69	High
		145.5125	37.5	High
		155	37.42	High
		164.4875	37.48	High
		173.9875	37.36	High
	4FSK 12.5 kHz	136.0125	37.72	High
		145.5125	37.54	High
		155	37.39	High
		164.4875	37.43	High
		173.9875	37.54	High

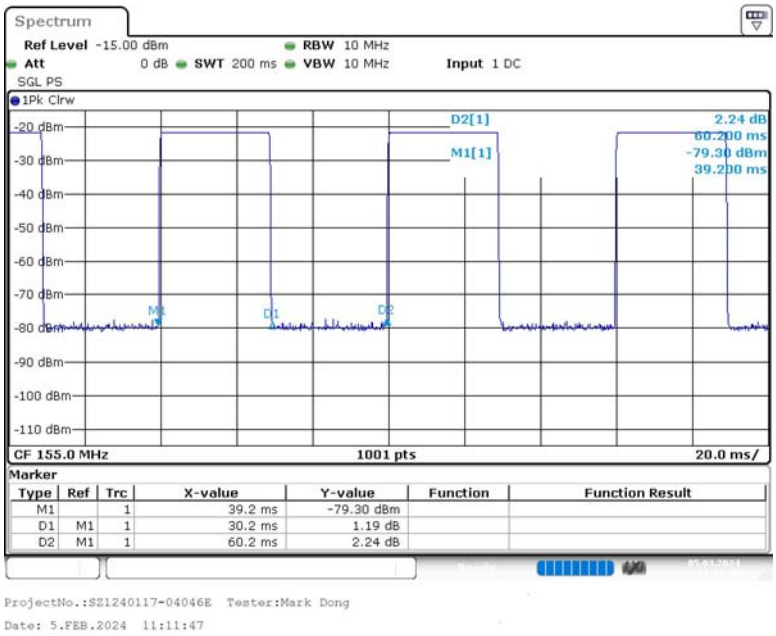
AXP565 VHF:

Test Mode		Frequency (MHz)	Output Power(dBm)	Power level
PTT (136-174MHz)	FM 12.5 kHz	136.0125	37.65	High
		145.5125	37.53	High
		155	37.42	High
		164.4875	37.48	High
		173.9875	37.34	High
	4FSK 12.5 kHz	136.0125	37.75	High
		145.5125	37.56	High
		155	37.48	High
		164.4875	37.43	High
		173.9875	37.52	High

AXP505 VHF:

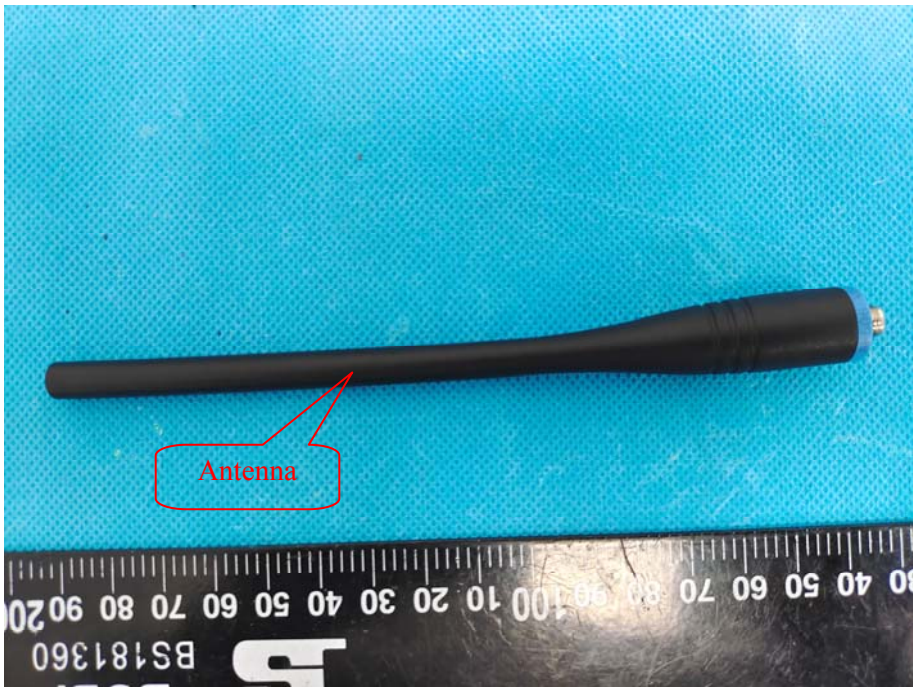
Test Mode		Frequency (MHz)	Output Power(dBm)	Power level
PTT (136-174MHz)	FM 12.5 kHz	136.0125	37.63	High
		145.5125	37.47	High
		155	37.41	High
		164.4875	37.34	High
		173.9875	37.33	High
	4FSK 12.5 kHz	136.0125	37.67	High
		145.5125	37.51	High
		155	37.43	High
		164.4875	37.42	High
		173.9875	37.52	High

Test Modes	Ton (ms)	Ton+off (ms)	Duty cycle (%)	Duty Cycle Factor
4FSK	30.2	60.2	50.2	1:1.99 (1:2)

Duty Cycle	
4FSK	

8. STANDALONE SAR TEST EXCLUSION CONSIDERATIONS

8.1 Antennas Location:



9. SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetric evaluation.

9.1 SAR Test Data

Environmental Conditions

Temperature:	22.9-23.8 ℃
Relative Humidity:	42 %
ATM Pressure:	101.1 kPa
Test Date:	2024/02/05

Testing was performed by Mark Dong.

PTT(136~174MHz):

Pre-scan all 5 Channels, the peak SAR located on 155MHz for Face Up mode and Body Back mode

	Test Mode		Frequency (MHz)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1 g SAR Value(W/kg)				
						Scaled Factor	Meas. SAR	PTT 50% Factor	Scaled SAR	Plot
Face Up (25 mm)	AXP595 VHF	FM 12.5 kHz	136.0125	/	/	/	/	/	/	/
			145.5125	/	/	/	/	/	/	/
			155	37.42	37.78	1.086	1.07	0.535	**0.58**	1#
			164.4875	/	/	/	/	/	/	/
			173.9875	/	/	/	/	/	/	/
		4FSK 12.5 kHz	136.0125	/	/	/	/	/	/	/
			145.5125	/	/	/	/	/	/	/
			155	37.39	37.78	1.094	0.518	0.259	0.28	2#
			164.4875	/	/	/	/	/	/	/
			173.9875	/	/	/	/	/	/	/
	AXP565 VHF	FM 12.5 kHz	136.0125	/	/	/	/	/	/	/
			145.5125	/	/	/	/	/	/	/
			155	37.42	37.78	1.086	0.989	0.4945	0.54	3#
			164.4875	/	/	/	/	/	/	/
			173.9875	/	/	/	/	/	/	/
	AXP505 VHF	FM 12.5 kHz	136.0125	/	/	/	/	/	/	/
			145.5125	/	/	/	/	/	/	/
			155	37.39	37.78	1.094	0.767	0.3835	0.42	4#
			164.4875	/	/	/	/	/	/	/
			173.9875	/	/	/	/	/	/	/

	Test Mode		Frequency (MHz)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1 g SAR Value(W/kg)				
						Scaled Factor	Meas. SAR	PTT 50% Factor	Scaled SAR	Plot
Body Back (0 mm)	AXP595 VHF	FM 12.5 kHz	136.0125	37.69	37.78	1.021	0.316	0.158	0.16	5#
			145.5125	37.5	37.78	1.067	1.89	0.945	1.01	6#
			155	37.42	37.78	1.086	3.14	1.57	**1.71**	7#
			164.4875	37.48	37.78	1.072	2.09	1.045	1.12	8#
			173.9875	37.36	37.78	1.102	0.337	0.1685	0.19	9#
		4FSK 12.5 kHz	136.0125	/	/	/	/	/	/	/
			145.5125	/	/	/	/	/	/	/
			155	37.39	37.78	1.094	1.77	0.885	0.97	10#
			164.4875	/	/	/	/	/	/	/
			173.9875	/	/	/	/	/	/	/
	AXP565 VHF	FM 12.5 kHz	136.0125	/	/	/	/	/	/	/
			145.5125	/	/	/	/	/	/	/
			155	37.42	37.78	1.086	2.83	1.415	1.54	11#
			164.4875	/	/	/	/	/	/	/
			173.9875	/	/	/	/	/	/	/
	AXP505 VHF	FM 12.5 kHz	136.0125	/	/	/	/	/	/	/
			145.5125	/	/	/	/	/	/	/
			155	37.39	37.78	1.094	3.02	1.51	1.65	12#
			164.4875	/	/	/	/	/	/	/
			173.9875	/	/	/	/	/	/	/

Note:

1. When the 1-g SAR is ≤ 3.5W/kg, testing for other channels are optional.
2. KDB 447498 D01 - A duty factor of 50% should be applied to determine compliance for radios with maximum operating duty factors ≤ 50%. The 50% duty factor only applies to exposure conditions where the radio operates with a mechanical PTT button.
3. The whole antenna and radiating structures that may contribute to the measured SAR or influence the SAR distribution has been included in the area scan.
4. The differents between model AXP595 VHF, AXP565 VHF, AXP505 VHF are the hardware with display and key board , AXP595 VHF was selected for fully testing, AXP565 VHF, AXP505 VHF was tested the worst case.

10. MEASUREMENT VARIABILITY

In accordance with published RF Exposure KDB procedure 865664 D01 SAR measurement 100 MHz to 6 GHz v01. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Note: The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

The Highest Measured SAR Configuration in Each Frequency Band

Head

SAR probe calibration point	Frequency Band	Freq.(MHz)	EUT Position	Meas. SAR (W/kg)		Largest to Smallest SAR Ratio
				Original	Repeated	
/	/	/	/	/	/	/

Body

SAR probe calibration point	Frequency Band	Freq.(MHz)	EUT Position	Meas. SAR (W/kg)		Largest to Smallest SAR Ratio
				Original	Repeated	
/	/	/	/	/	/	/

Note:

1. Second Repeated Measurement is not required since the ratio of the largest to smallest SAR for the original and first repeated measurement is not > 1.20.
2. The measured SAR results **do not** have to be scaled to the maximum tune-up tolerance to determine if repeated measurements are required.
3. SAR measurement variability must be assessed for each frequency band, which is determined by the **SAR probe calibration point and tissue-equivalent medium** used for the device measurements.

11.SAR Plots

Plot 1#: FM 12.5 kHz_155MHz_Face Up

DUT: Digital Portable Radio; Type: AXP595 VHF; Serial: 2GRW-1

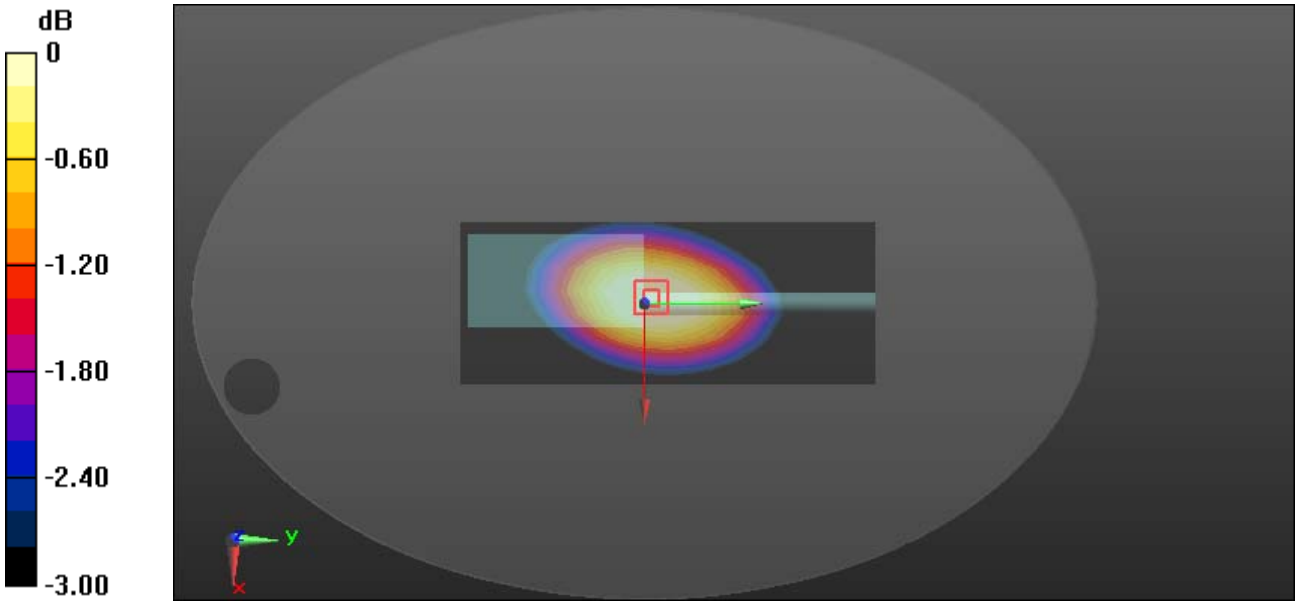
Communication System: FM (0); Frequency: 155 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 155 MHz; σ = 0.758 S/m; ε_r = 52.153; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3801; ConvF(11.02, 11.02, 11.02) @ 155 MHz; Calibrated: 2023/6/23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: ELI v8.0; Type: QDOVA002AA; Serial: TP:2051
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (8x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.18 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 40.92 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 1.07 W/kg; SAR(10 g) = 0.847 W/kg
Maximum value of SAR (measured) = 1.11 W/kg



0 dB = 1.11 W/kg = 0.45 dBW/kg

Plot 2#: 4FSK 12.5 kHz_155MHz_Face Up

DUT: Digital Portable Radio; Type: AXP595 VHF; Serial: 2GRW-1

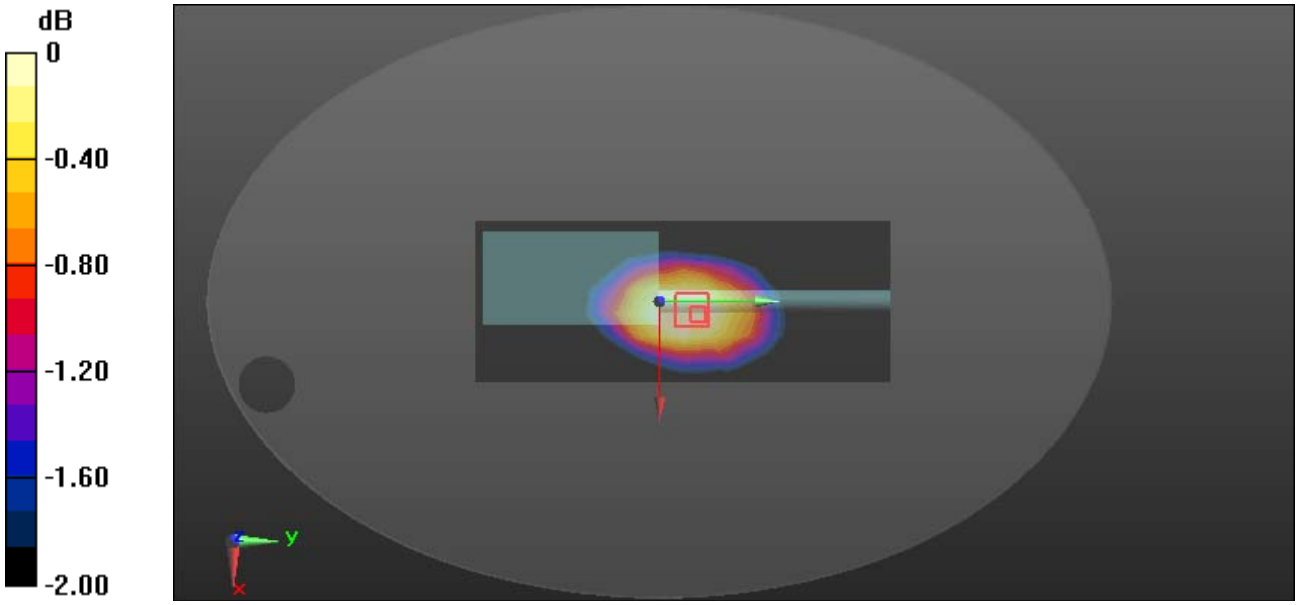
Communication System: 4FSK (0); Frequency: 155 MHz;Duty Cycle: 1:2
Medium parameters used (interpolated): f = 155 MHz; σ = 0.758 S/m; ε_r = 52.153; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3801; ConvF(11.02, 11.02, 11.02) @ 155 MHz; Calibrated: 2023/6/23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: ELI v8.0; Type: QDOVA002AA; Serial: TP:2051
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (8x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.562 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.06 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.726 W/kg
SAR(1 g) = 0.518 W/kg; SAR(10 g) = 0.408 W/kg
Maximum value of SAR (measured) = 0.547 W/kg



0 dB = 0.547 W/kg = -2.62 dBW/kg

Plot 3#: FM 12.5 kHz_155MHz_Face Up

DUT: Digital Portable Radio; Type: AXP565 VHF; Serial: 2GRW-2

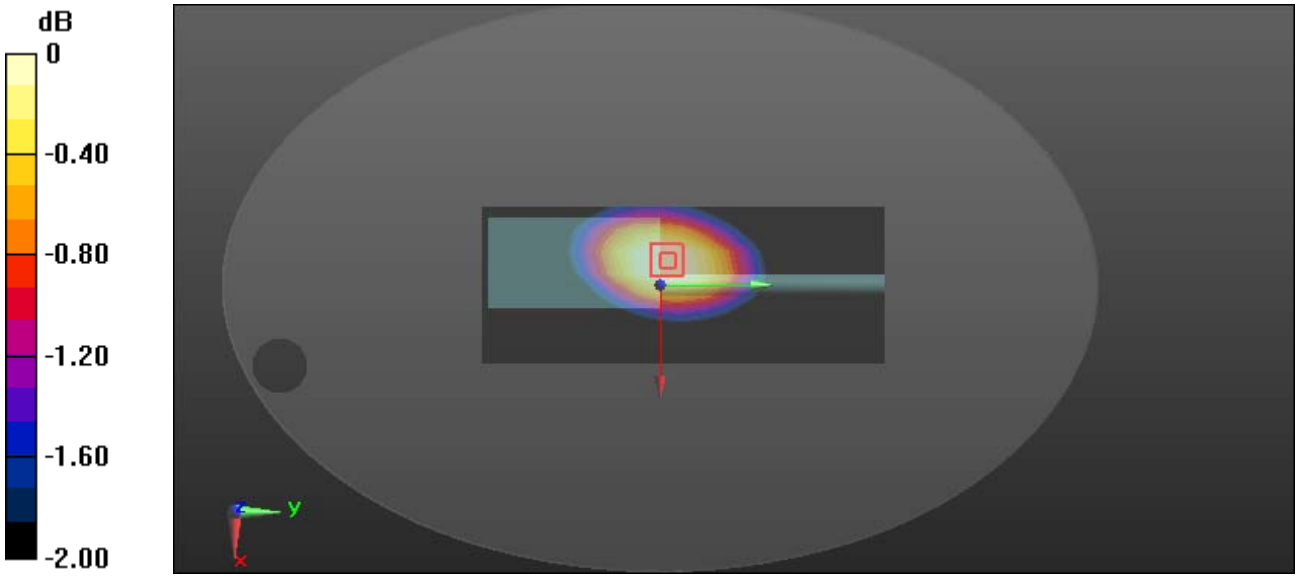
Communication System: FM (0); Frequency: 155 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 155 MHz; σ = 0.758 S/m; ε_r = 52.153; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3801; ConvF(11.02, 11.02, 11.02) @ 155 MHz; Calibrated: 2023/6/23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: ELI v8.0; Type: QDOVA002AA; Serial: TP:2051
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (8x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.06 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 36.67 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.989 W/kg; SAR(10 g) = 0.781 W/kg
Maximum value of SAR (measured) = 1.03 W/kg



0 dB = 1.03 W/kg = 0.13 dBW/kg

Plot 4#: FM 12.5 kHz_155MHz_Face Up

DUT: Digital Portable Radio; Type: AXP505 VHF; Serial: 2GRW-3

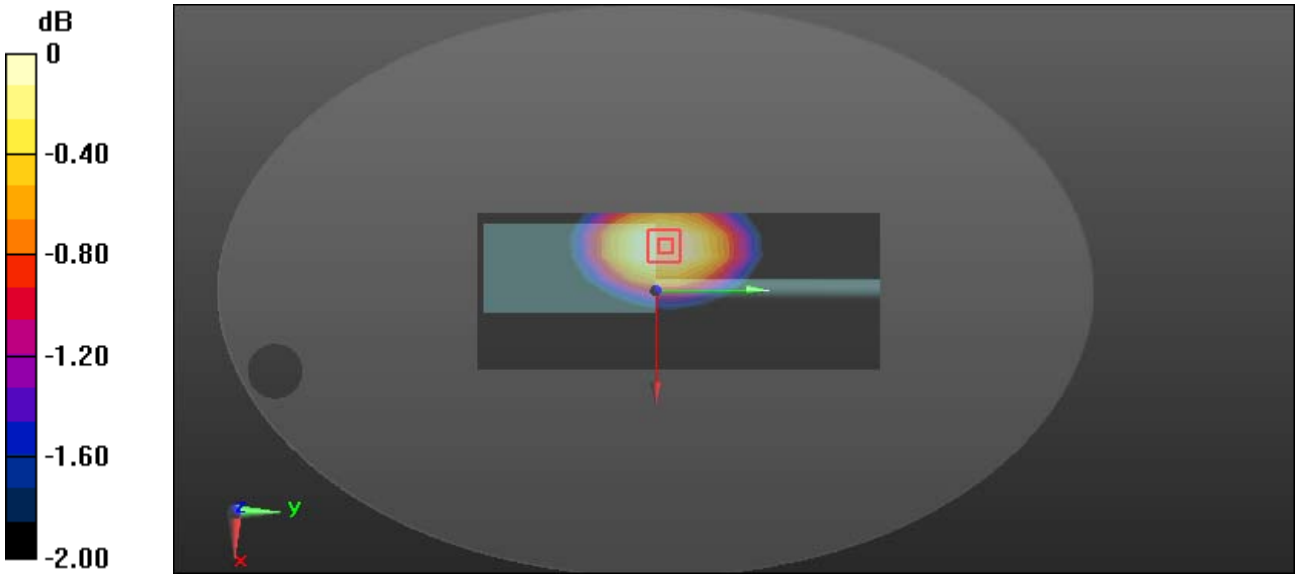
Communication System: FM (0); Frequency: 155 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 155 MHz; σ = 0.758 S/m; ε_r = 52.153; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3801; ConvF(11.02, 11.02, 11.02) @ 155 MHz; Calibrated: 2023/6/23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: ELI v8.0; Type: QDOVA002AA; Serial: TP:2051
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (8x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.811 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.85 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.985 W/kg
SAR(1 g) = 0.767 W/kg; SAR(10 g) = 0.607 W/kg
Maximum value of SAR (measured) = 0.797 W/kg



0 dB = 0.797 W/kg = -0.99 dBW/kg

Plot 5#: FM 12.5 kHz_136.0125MHz_Body Back

DUT: Digital Portable Radio; Type: AXP595 VHF; Serial: 2GRW-1

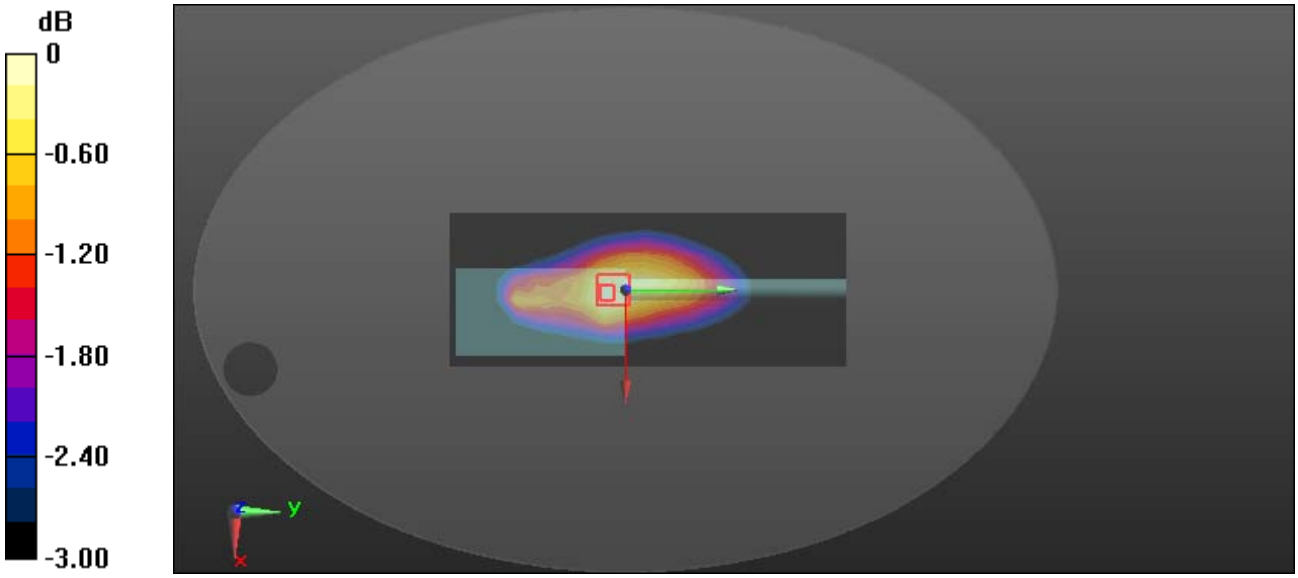
Communication System: FM (0); Frequency: 136.012 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 136.012 MHz; σ = 0.743 S/m; ε_r = 52.693; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3801; ConvF(11.02, 11.02, 11.02) @ 136.012 MHz; Calibrated: 2023/6/23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: ELI v8.0; Type: QDOVA002AA; Serial: TP:2051
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (8x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.333 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.32 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.451 W/kg
SAR(1 g) = 0.316 W/kg; SAR(10 g) = 0.236 W/kg
Maximum value of SAR (measured) = 0.331 W/kg



0 dB = 0.331 W/kg = -4.80 dBW/kg

Plot 6#: FM 12.5 kHz_145.5125MHz_Body Back

DUT: Digital Portable Radio; Type: AXP595 VHF; Serial: 2GRW-1

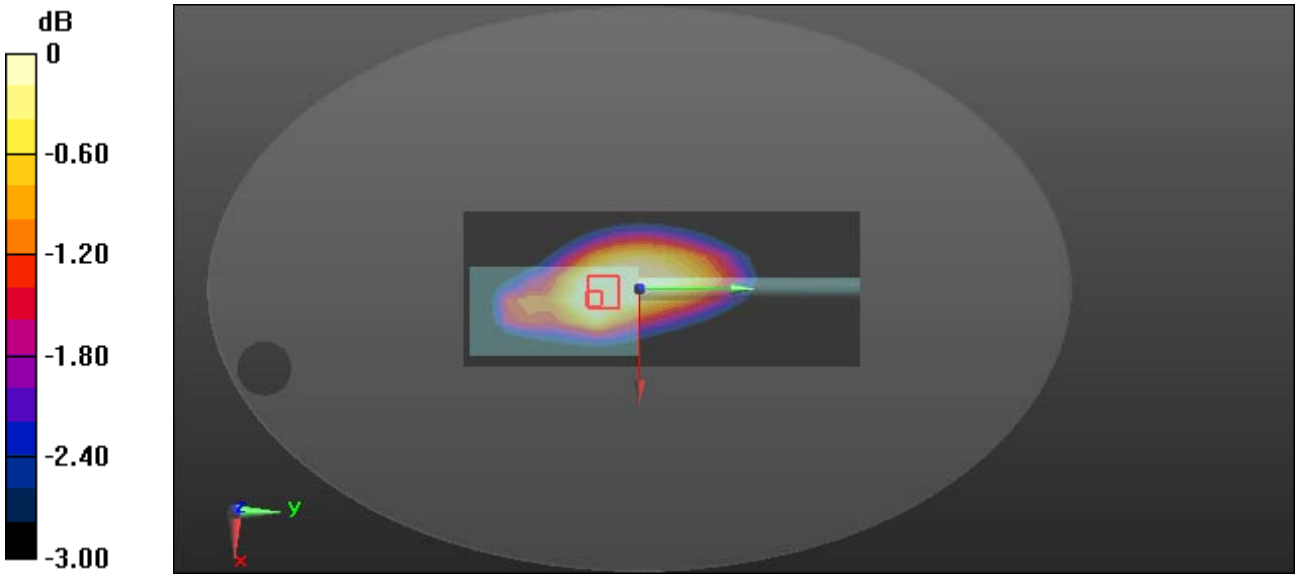
Communication System: FM (0); Frequency: 145.512 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 145.512 MHz; σ = 0.75 S/m; ε_r = 52.411; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3801; ConvF(11.02, 11.02, 11.02) @ 145.512 MHz; Calibrated: 2023/6/23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: ELI v8.0; Type: QDOVA002AA; Serial: TP:2051
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (8x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.27 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 52.30 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 2.77 W/kg
SAR(1 g) = 1.89 W/kg; SAR(10 g) = 1.41 W/kg
Maximum value of SAR (measured) = 1.96 W/kg



0 dB = 1.96 W/kg = 2.92 dBW/kg

Plot 7#: FM 12.5 kHz_155MHz_Body Back

DUT: Digital Portable Radio; Type: AXP595 VHF; Serial: 2GRW-1

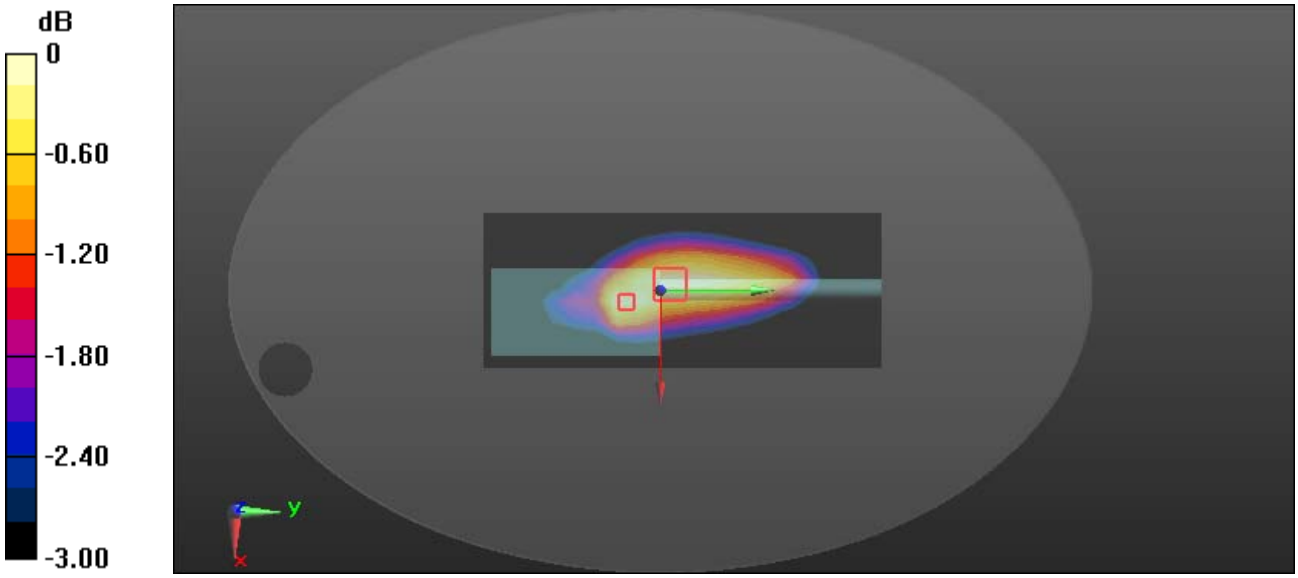
Communication System: FM (0); Frequency: 155 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 155 MHz; σ = 0.758 S/m; ε_r = 52.153; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3801; ConvF(11.02, 11.02, 11.02) @ 155 MHz; Calibrated: 2023/6/23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: ELI v8.0; Type: QDOVA002AA; Serial: TP:2051
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (8x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.37 W/kg

Zoom Scan (8x9x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 67.58 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 4.85 W/kg
SAR(1 g) = 3.14 W/kg; SAR(10 g) = 2.3 W/kg
Maximum value of SAR (measured) = 3.34 W/kg



0 dB = 3.34 W/kg = 5.24 dBW/kg

Plot 8#: FM 12.5 kHz_164.4875MHz_Body Back

DUT: Digital Portable Radio; Type: AXP595 VHF; Serial: 2GRW-1

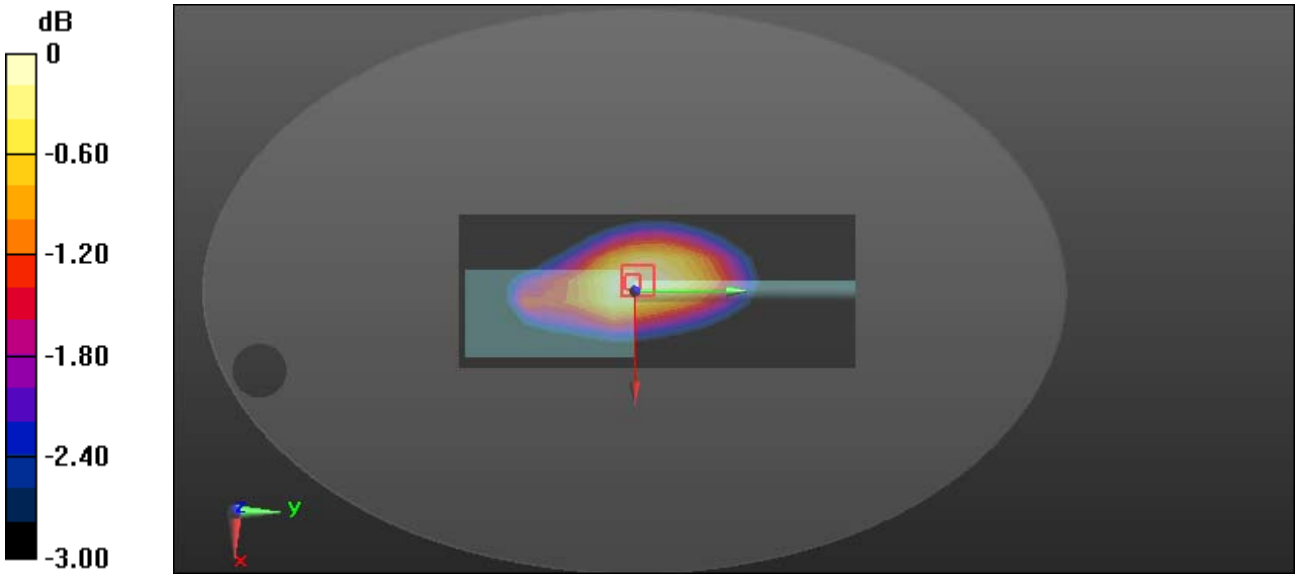
Communication System: FM (0); Frequency: 164.488 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 164.488 MHz; σ = 0.764 S/m; ε_r = 51.942; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3801; ConvF(11.02, 11.02, 11.02) @ 164.488 MHz; Calibrated: 2023/6/23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: ELI v8.0; Type: QDOVA002AA; Serial: TP:2051
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (8x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.19 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 53.02 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 2.74 W/kg
SAR(1 g) = 2.09 W/kg; SAR(10 g) = 1.62 W/kg
Maximum value of SAR (measured) = 2.17 W/kg



0 dB = 2.17 W/kg = 3.36 dBW/kg

Plot 9#: FM 12.5 kHz_173.9875MHz_Body Back

DUT: Digital Portable Radio; Type: AXP595 VHF; Serial: 2GRW-1

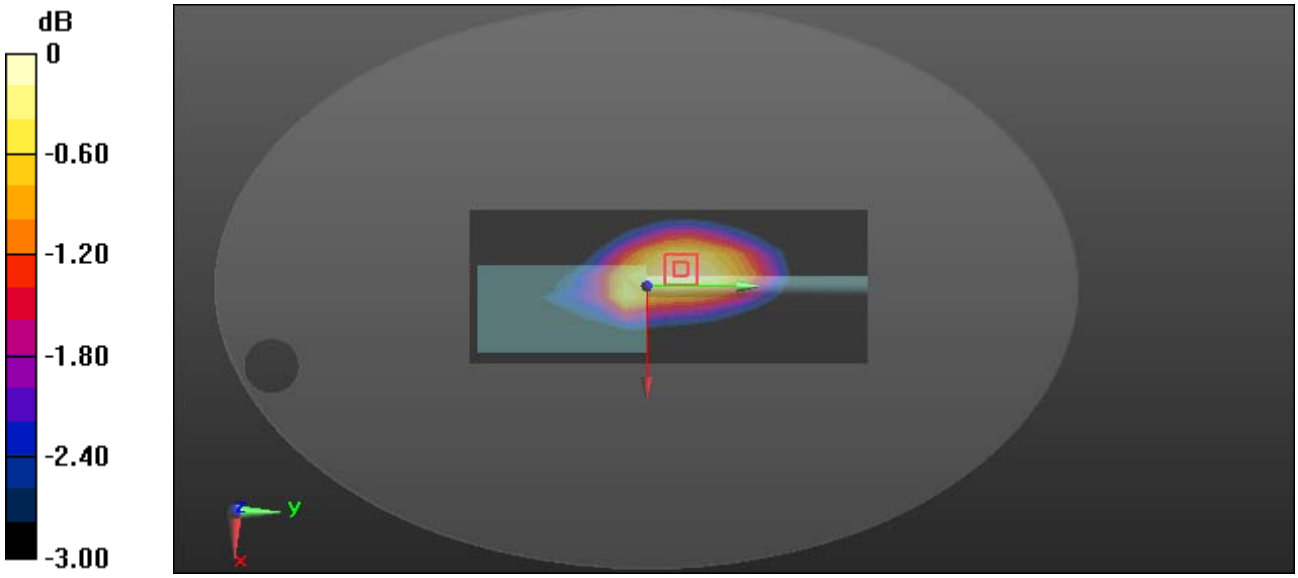
Communication System: FM (0); Frequency: 173.988 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 173.988 MHz; σ = 0.77 S/m; ε_r = 51.727; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3801; ConvF(11.02, 11.02, 11.02) @ 173.988 MHz; Calibrated: 2023/6/23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: ELI v8.0; Type: QDOVA002AA; Serial: TP:2051
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (8x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.351 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.80 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.454 W/kg
SAR(1 g) = 0.337 W/kg; SAR(10 g) = 0.258 W/kg
Maximum value of SAR (measured) = 0.352 W/kg



0 dB = 0.352 W/kg = -4.53 dBW/kg

Plot 10#: 4FSK 12.5 kHz_155MHz_Body Back

DUT: Digital Portable Radio; Type: AXP595 VHF; Serial: 2GRW-1

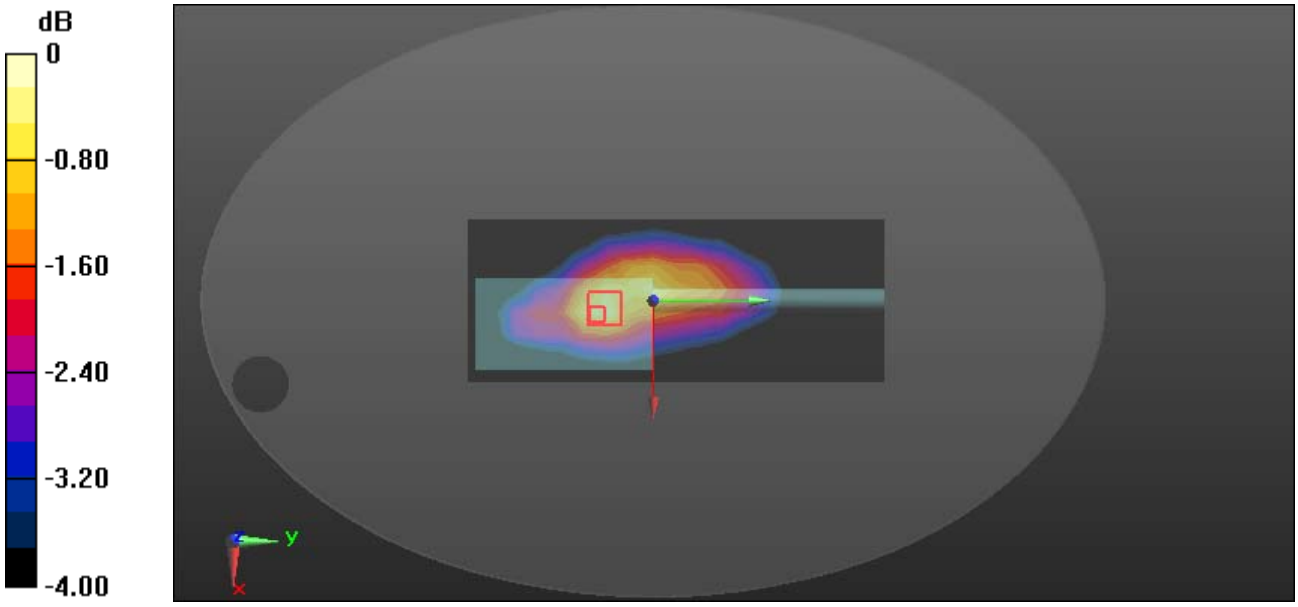
Communication System: 4FSK (0); Frequency: 155 MHz;Duty Cycle: 1:2
Medium parameters used (interpolated): f = 155 MHz; σ = 0.758 S/m; ε_r = 52.153; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3801; ConvF(11.02, 11.02, 11.02) @ 155 MHz; Calibrated: 2023/6/23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: ELI v8.0; Type: QDOVA002AA; Serial: TP:2051
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (8x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.85 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 46.02 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 3.39 W/kg
SAR(1 g) = 1.77 W/kg; SAR(10 g) = 1.22 W/kg
Maximum value of SAR (measured) = 1.84 W/kg



0 dB = 1.84 W/kg = 2.65 dBW/kg

Plot 11#: FM 12.5 kHz_155MHz_Body Back

DUT: Digital Portable Radio; Type: AXP565 VHF; Serial: 2GRW-2

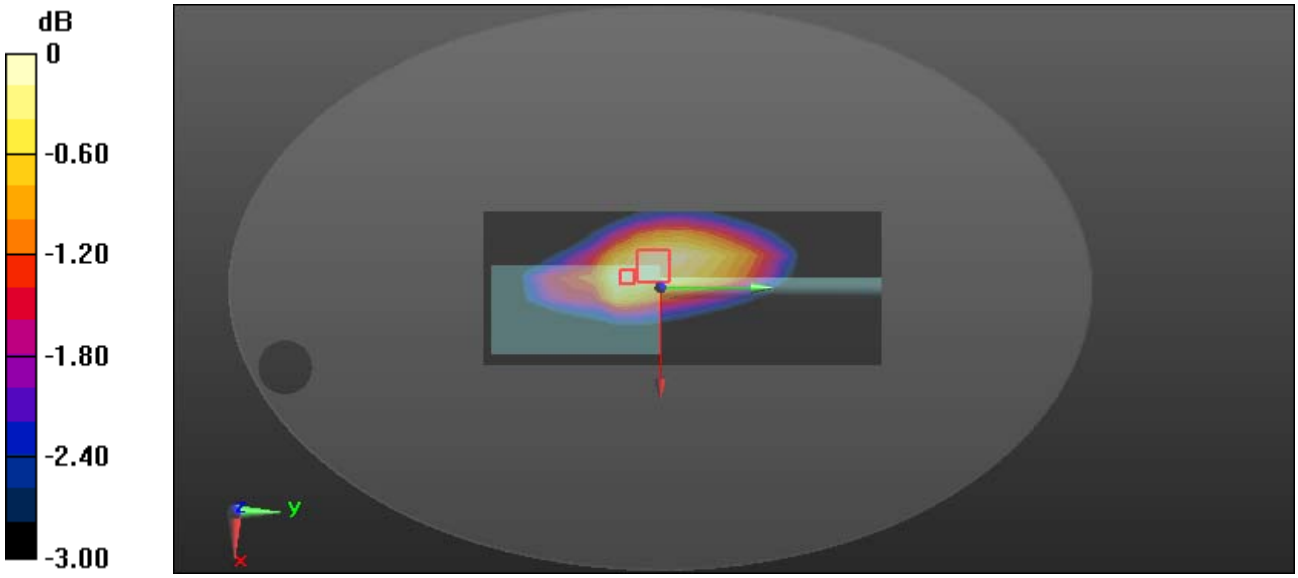
Communication System: FM (0); Frequency: 155 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 155 MHz; σ = 0.758 S/m; ε_r = 52.153; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3801; ConvF(11.02, 11.02, 11.02) @ 155 MHz; Calibrated: 2023/6/23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: ELI v8.0; Type: QDOVA002AA; Serial: TP:2051
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (8x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.98 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 57.53 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 4.00 W/kg
SAR(1 g) = 2.83 W/kg; SAR(10 g) = 2.16 W/kg
Maximum value of SAR (measured) = 2.97 W/kg



0 dB = 2.97 W/kg = 4.73 dBW/kg

Plot 12#: FM 12.5 kHz_155MHz_Body Back

DUT: Digital Portable Radio; Type: AXP505 VHF; Serial: 2GRW-3

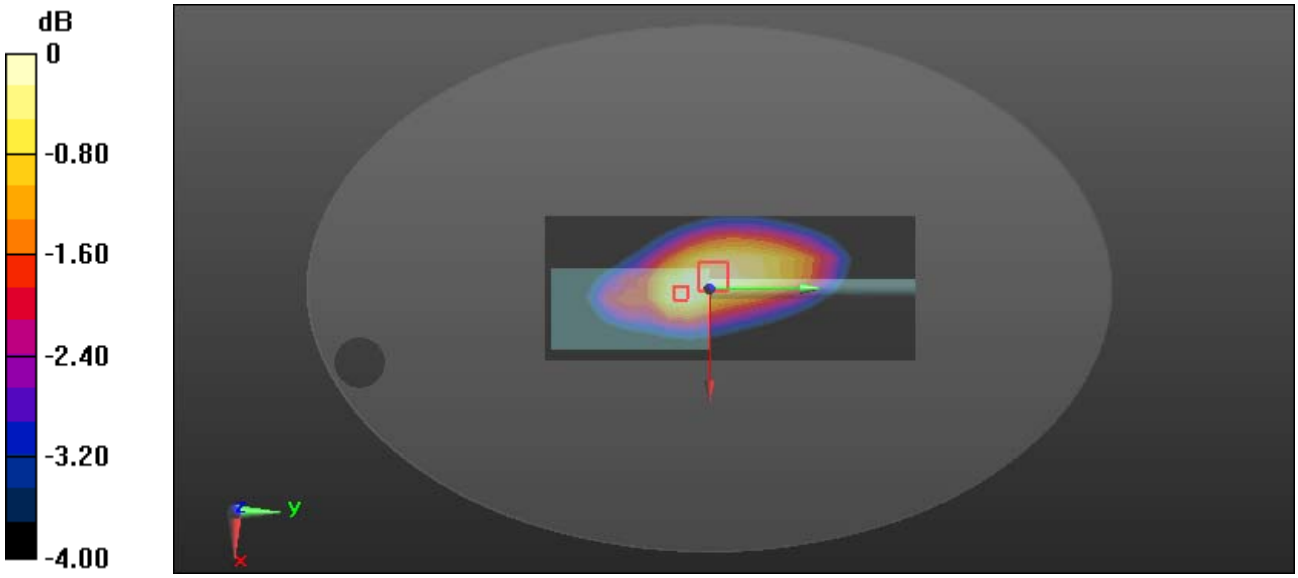
Communication System: FM (0); Frequency: 155 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 155 MHz; σ = 0.758 S/m; ε_r = 52.153; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3801; ConvF(11.02, 11.02, 11.02) @ 155 MHz; Calibrated: 2023/6/23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: ELI v8.0; Type: QDOVA002AA; Serial: TP:2051
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (8x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.14 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 65.17 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 4.68 W/kg
SAR(1 g) = 3.02 W/kg; SAR(10 g) = 2.19 W/kg
Maximum value of SAR (measured) = 3.17 W/kg



0 dB = 3.17 W/kg = 5.01 dBW/kg

APPENDIX A - MEASUREMENT UNCERTAINTY

The uncertainty budget has been determined for the measurement system and is given in the following Table.

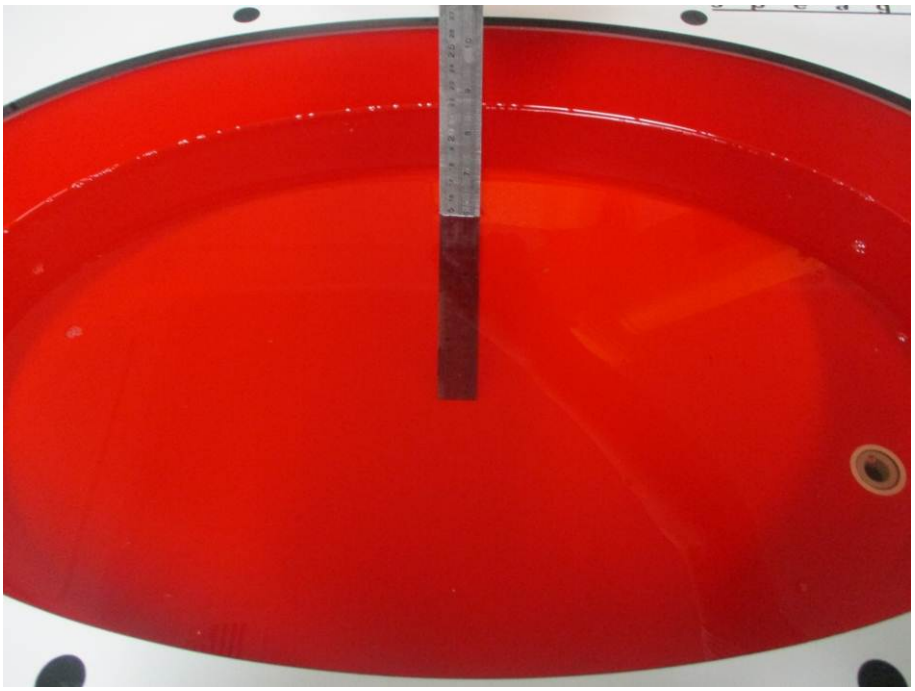
Measurement uncertainty evaluation for IEC/IEEE 62209-1528:2020 SAR test (Frequency Range: 4 MHz - 3 GHz)

Symbol	Input quantity X_i (source of uncertainty)	Ref.	Prob. Dist.[a] PDFi	Unc. $a(x_i)$	Div.[a] q_i	$u(x_i) = a(x_i)/q_i$	c_i (1g)	c_i (10g)	u(y) = $c_i \cdot u(x_i)$ (1g)	u(y) = $c_i \cdot u(x_i)$ (10g)	v_i
Measurement system errors											
CF	Probe calibration	8.4.1.1	N (k = 2)	11.1	2	5.6	1	1	5.6	5.6	∞
CF_{drift}	Probe calibration drift	8.4.1.2	R	1.9	√3	1.1	1	1	1.1	1.1	∞
LIN	Probe linearity and detection limit	8.4.1.3	R	5.4	√3	3.1	1	1	3.1	3.1	∞
BBS	Broadband signal	8.4.1.4	R	2.6	√3	1.5	1	1	1.5	1.5	∞
ISO	Probe isotropy	8.4.1.5	R	10.5	√3	6.1	1	1	6.1	6.1	∞
DAE	Other probe and data acquisition errors	8.4.1.6	N	0.8	1	0.8	1	1	0.8	0.8	∞
AMB	RF ambient and noise	8.4.1.7	N	1	1	1	1	1	1	1	∞
Δ_{xyz}	Probe positioning errors	8.4.1.8	N	0.007	1	0.007	2/δ	2/δ	0.6	0.6	∞
DAT	Data processing errors	8.4.1.9	N	6.3	1	6.3	1	1	6.3	6.3	∞
Phantom and device (DUT or validation antenna) errors											
LIQ(σ)	Measurement of phantom conductivity(σ)	8.4.2.1	N	2.9	1	2.9	0.92	0.85	2.7	2.5	∞
$LIQ(T_c)$	Temperature effects (medium)	8.4.2.2	R	2.2	√3	1.3	0.92	0.85	1.2	1.1	∞
EPS	Shell permittivity	8.4.2.3	R	4.6	√3	2.7	0	0	0	0	∞
DIS	Distance between the radiating element of the DUT and the phantom medium	8.4.2.4	N	3.1	1	3.1	2	2	6.2	6.2	∞
D_{xyz}	Repeatability of positioning the DUT or source against the phantom	8.4.2.5	N	1.7	1	1.7	1	1	1.7	1.7	5
H	Device holder effects	8.4.2.6	N	3.7	1	3.7	1	1	3.7	3.7	∞
MOD	Effect of operating mode on probe sensitivity	8.4.2.7	R	3.5	√3	2.0	1	1	2	2	∞
TAS	Time-average SAR	8.4.2.8	R	1.5	√3	0.9	1	1	0.9	0.9	∞
RF_{drift}	Variation in SAR due to drift in output of DUT	8.4.2.9	N	2.3	1	2.3	1	1	2.3	2.3	∞
VAL	Validation antenna uncertainty (validation measurement only)	8.4.2.10	N	2.2	1	2.2	1	1	2.2	2.2	∞
P_{in}	Uncertainty in accepted power (validation measurement only)	8.4.2.11	N	1.4	1	1.4	1	1	1.4	1.4	∞
Corrections to the SAR result (if applied)											
$C(\varepsilon', \sigma)$	Phantom deviation from target (ε', σ)	8.4.3.1	N	1.4	1	1.4	1	0.82	1.4	1.1	∞
$C(R)$	SAR scaling	8.4.3.2	R	2.8	√3	2.8	1	1	1.6	1.6	∞
$u(\Delta SAR)$	Combined uncertainty								14.4	14.4	
U	Expanded uncertainty and effective degrees of freedom						$U =$		28.8	28.8	$v_{eff} =$

a Other probability distributions and divisors may be used if they better represent available knowledge of the quantities concerned.

APPENDIX B - EUT TEST POSITION PHOTOS

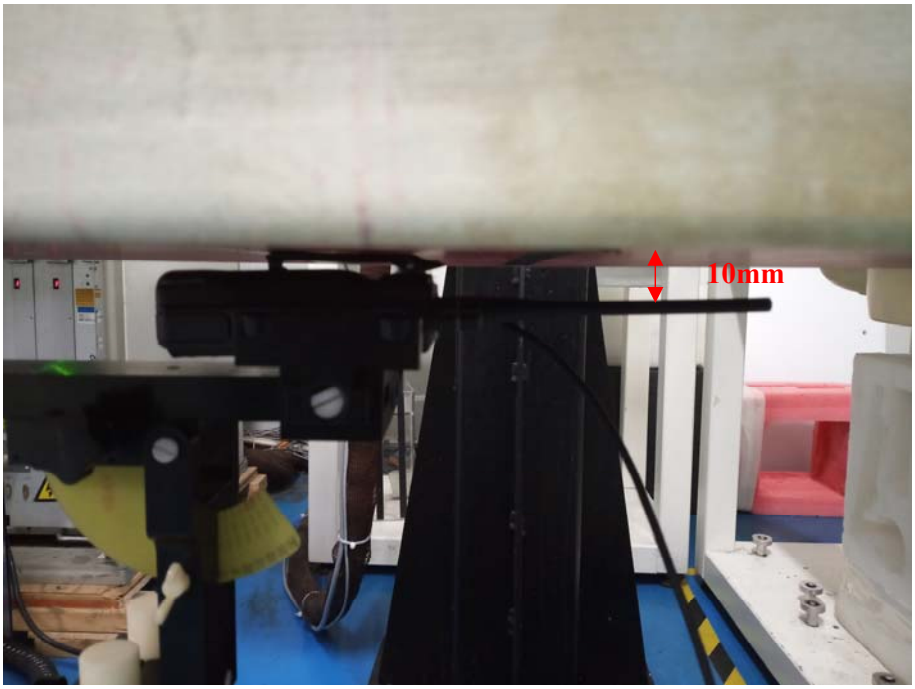
Liquid depth ≥ 15cm



AXP595 VHF:

Face Up Setup Photo (25mm)

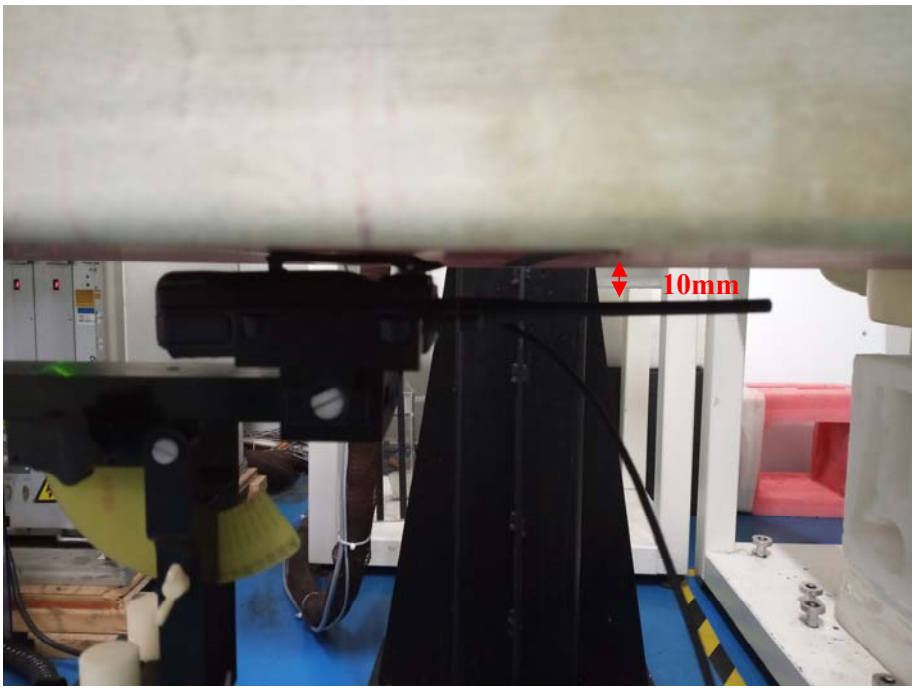
Body Back Setup Photo (0mm)



AXP565 VHF:

Face Up Setup Photo (25mm)

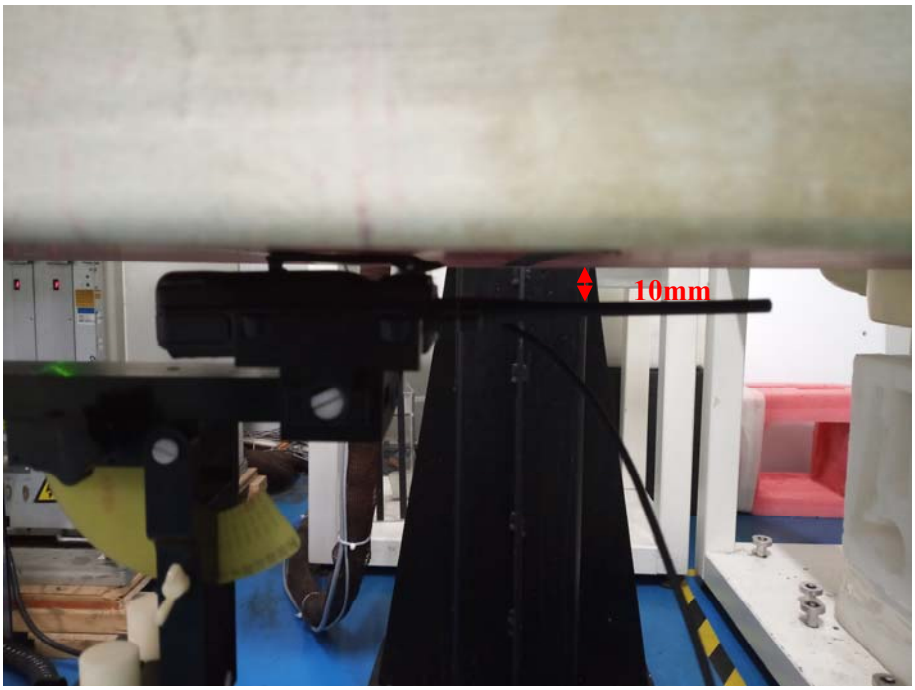
Body Back Setup Photo (0mm)



AXP505 VHF:

Face Up Setup Photo (25mm)

Body Back Setup Photo (0mm)



APPENDIX C - PROBE CALIBRATION CERTIFICATES

Please refer to the attachment.

APPENDIX D - DIPOLE CALIBRATION CERTIFICATES

Please refer to the attachment.

===== END OF REPORT ====