MOTOROLA SOLUTIONS

MS ISO/IEC 17025 TESTING SAMM No. 0826

ACCREDITED CERTIFICATE 2518.05

DECLARATION OF COMPLIANCE SAR ASSESSMENT PCII Report Part 1 of 2

Motorola Solutions Inc.
EME Test Laboratory
Motorola Solutions Malaysia Sdn Bhd
Plot 2A, Medan Bayan Lepas,
Mukim 12 SWD 11900 Bayan Lepas Penang, Malaysia.

Date of Report: 01/17/2022
Report Revision: A

Responsible Engineer:	Puteri Alifah Liyana Bin Nor Rahim (EME Engineer)
Report Author:	Muhammad Zakwan Bin Zaidi (EME Senior Technician)
Date/s Tested:	10/23/2-21-10/24/2021, 12/30/2021-12/31/2021, 1/1/2022, 1/3/2022
Manufacturer:	Motorola Solutions Inc.
DUT Description:	Handheld Portable PMUE4541B, XCVR 403-470 MHz, Display & Handheld Portable PMUE4542B, XCVR 403-470 MHz, Non-Display
Test TX mode(s):	FM/TDMA (PTT)
Max. Power output:	2.4W (Analog), 3.3W (Digital)
Tx Frequency Bands:	LMR 403-470 MHz
Signaling type:	FM/TDMA (LMR)
Model(s) Tested:	PMUE4541B
Model(s) Certified:	PMUE4542B, AAH88QCC9JA2AN, AAH88QCP9JA2AN, AAH88QCP9JG2AN
Serial Number(s):	546TXV0351 & 546TQM0138
Classification:	Occupational/Controlled
Applicant Name:	Motorola Solutions Inc.
Applicant Address:	8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322
FCC ID:	AZ489FT4922 ; LMR 406.1-470MHz This report contains results that are immaterial for FCC equipment approval, which are clearly identified.
IC:	109U-89FT4922 ; LMR 406.1-430 MHz and 450-470 MHz This report contains results that are immaterial for ISED equipment approval, which are clearly identified.
ISED Test Site registration:	24843
FCC Test Firm Registration Number:	823256

The test results clearly demonstrate compliance with FCC Occupational/Controlled RF Exposure limits of 8 W/kg averaged over 1 gram per the requirements of FCC 47 CFR § 2.1093 and RSS-102 (Issue 5).

Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with the national and international reference standards and guidelines listed in section 4.0 of this report (no deviation from standard methods). This report shall not be reproduced without written approval from an officially designated representative of the Motorola Solutions Inc EME Laboratory.
I attest to the accuracy of the data and assume full responsibility for the completeness of these measurements. This reporting format is consistent with the suggested guidelines of the TIA TSB-150 December 2004. The results and statements contained in this report pertain only to the device(s) evaluated.

Pei Loo Tey
Approved Signatory
Approval Date: 1/17/2022

Appendix C
Dipole Calibration Certificates

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

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

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

Accreditation No.: SCS 0108

Client: Motorola Solutions MY

Certificate No: D450V3-1054_Mar19

CALIBRATION CERTIFICATE

Object: D450V3 - SN:1054

Calibration procedure(s): QA CAL-15.v9
Calibration Procedure for SAR Validation Sources below 700 MHz

Calibration date: March 11, 2019

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5277 (20x)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 3877	31-Dec-18 (No. EX3-3877_Dec18)	Dec-19
DAE4	SN: 654	05-Jul-18 (No. DAE4-654_Jul18)	Jul-19

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-18)	In house check: Jun-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: March 11, 2019

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

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Swiss Calibration Service

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

Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.2
Extrapolation	Advanced Extrapolation	
Phantom	ELI4 Flat Phantom	Shell thickness: 2 ± 0.2 mm
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	43.5	0.87 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	44.1 ± 6 %	0.87 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	1.14 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**4.57 W/kg ± 18.1 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	0.763 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**3.06 W/kg ± 17.6 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	56.7	0.94 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.7 ± 6 %	0.93 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	1.13 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**4.54 W/kg ± 18.1 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	0.762 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**3.06 W/kg ± 17.6 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	60.2 Ω - 0.4 jΩ
Return Loss	- 20.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	57.7 Ω - 3.6 jΩ
Return Loss	- 22.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.346 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 11.03.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 450 MHz; Type: D450V3; Serial: D450V3 - SN:1054

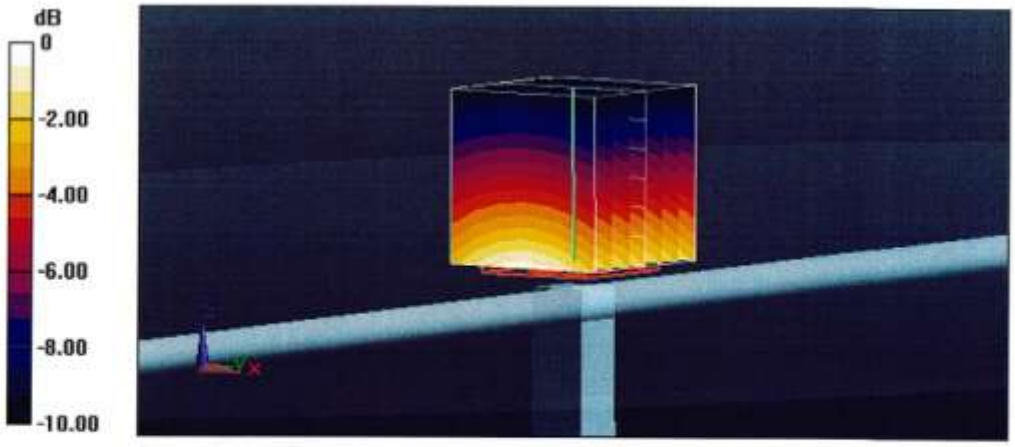
Communication System: UID 0 - CW; Frequency: 450 MHz
Medium parameters used: f = 450 MHz; σ = 0.87 S/m; ε_r = 44.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3877; ConvF(10.5, 10.5, 10.5) @ 450 MHz; Calibrated: 31.12.2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn654; Calibrated: 05.07.2018
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1003
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

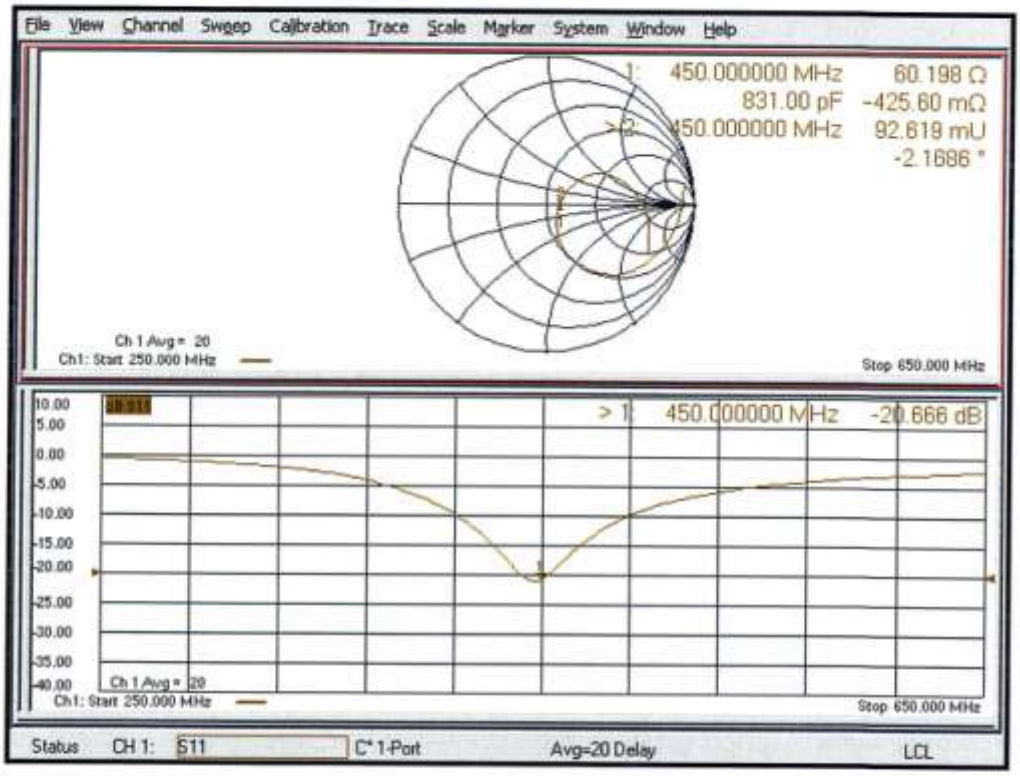
Dipole Calibration for Head Tissue/d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 38.90 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.75 W/kg
SAR(1 g) = 1.14 W/kg; SAR(10 g) = 0.763 W/kg
Maximum value of SAR (measured) = 1.53 W/kg



0 dB = 1.53 W/kg = 1.85 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 11.03.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 450 MHz; Type: D450V3; Serial: D450V3 - SN:1054

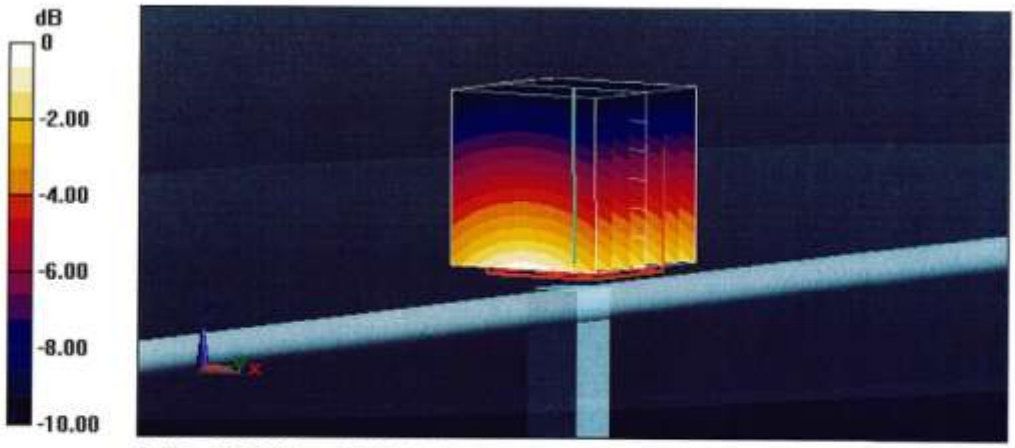
Communication System: UID 0 - CW; Frequency: 450 MHz
Medium parameters used: f = 450 MHz; σ = 0.93 S/m; ε_r = 55.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3877; ConvF(10.7, 10.7, 10.7) @ 450 MHz; Calibrated: 31.12.2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn654; Calibrated: 05.07.2018
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1003
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

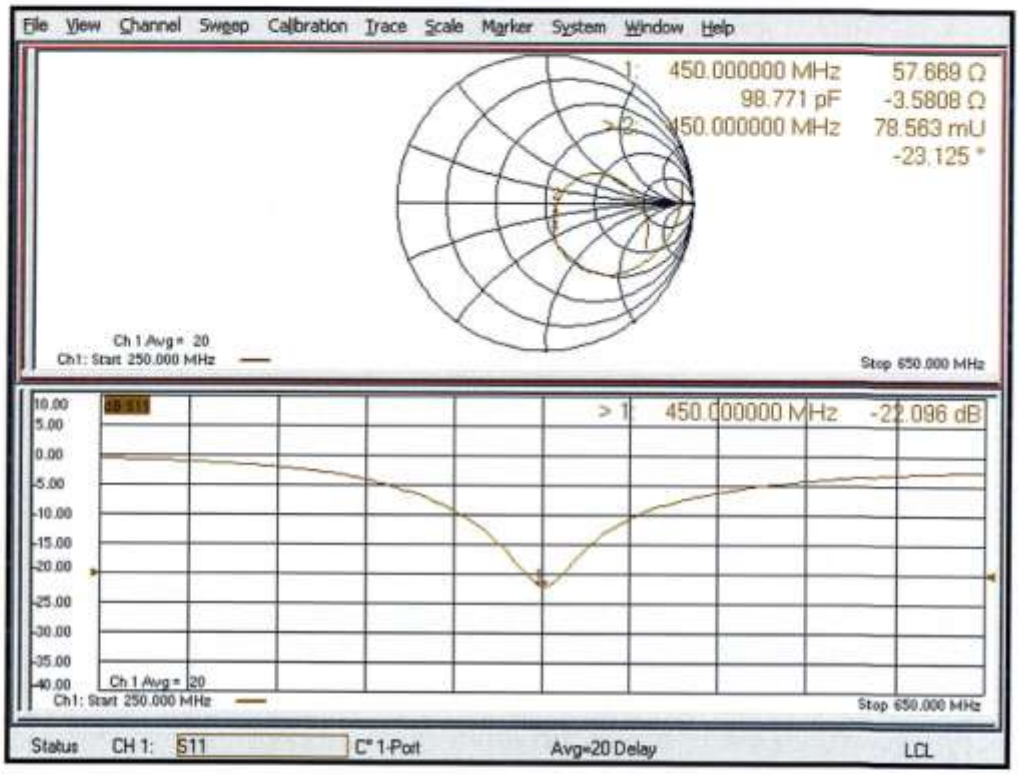
Dipole Calibration for Body Tissue/d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 41.61 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.73 W/kg
SAR(1 g) = 1.13 W/kg; SAR(10 g) = 0.762 W/kg
Maximum value of SAR (measured) = 1.51 W/kg



0 dB = 1.51 W/kg = 1.79 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client Motorola Solutions MY

Certificate No: D450V3-1077_Jul21

CALIBRATION CERTIFICATE

Object	D450V3 - SN:1077
Calibration procedure(s)	QA CAL-15.v9 Calibration Procedure for SAR Validation Sources below 700 MHz
Calibration date:	July 09, 2021

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	09-Apr-21 (No. 217-03291/03292)	Apr-22
Power sensor NRP-Z91	SN: 103244	09-Apr-21 (No. 217-03291)	Apr-22
Power sensor NRP-Z91	SN: 103245	09-Apr-21 (No. 217-03292)	Apr-22
Reference 20 dB Attenuator	SN: CC2552 (20x)	09-Apr-21 (No. 217-03343)	Apr-22
Type-N mismatch combination	SN: 310982 / 06327	09-Apr-21 (No. 217-03344)	Apr-22
Reference Probe EX3DV4	SN: 3877	30-Dec-20 (No. EX3-3877_Dec20)	Dec-21
DAE4	SN: 654	28-Jun-21 (No. DAE4-654_Jun21)	Jun-22

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-20)	In house check: Jun-22
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-20)	In house check: Jun-22
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-20)	In house check: Jun-22
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-20)	In house check: Jun-22
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-20)	In house check: Oct-21

	Name	Function	Signature
Calibrated by:	Jeffrey Katzman	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: July 9, 2021

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Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

c) DASY System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The source is mounted in a touch configuration below the center marking of the flat phantom.
- *Return Loss:* This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	ELI4 Flat Phantom	Shell thickness: 2 ± 0.2 mm
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	43.5	0.87 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	43.2 ± 6 %	0.87 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	1.16 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**4.63 W/kg ± 18.1 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	0.772 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**3.08 W/kg ± 17.6 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	56.7	0.94 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	56.7 ± 6 %	0.93 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	1.15 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**4.64 W/kg ± 18.1 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	0.774 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**3.12 W/kg ± 17.6 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	55.1 Ω - 6.3 jΩ
Return Loss	- 22.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	52.4 Ω - 9.8 jΩ
Return Loss	- 20.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.351 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 07.07.2021

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 450 MHz; Type: D450V3; Serial: D450V3 - SN:1077

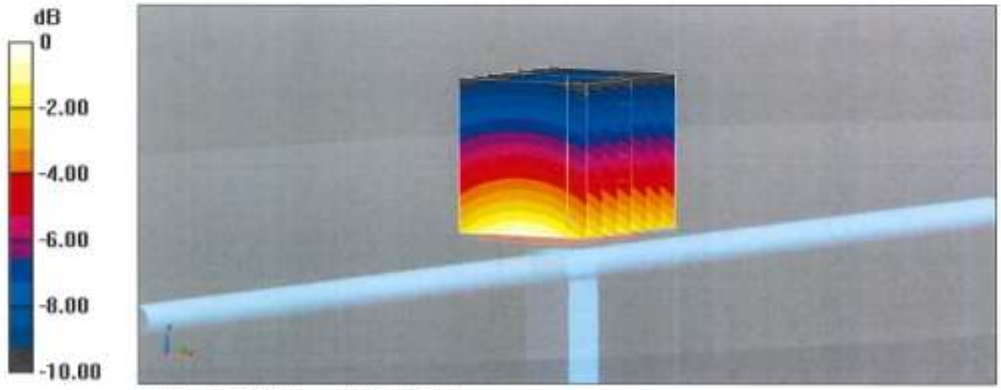
Communication System: UID 0 - CW; Frequency: 450 MHz
Medium parameters used: f = 450 MHz; σ = 0.87 S/m; ε_r = 43.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3877; ConvF(10.64, 10.64, 10.64) @ 450 MHz; Calibrated: 30.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn654; Calibrated: 28.06.2021
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1003
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

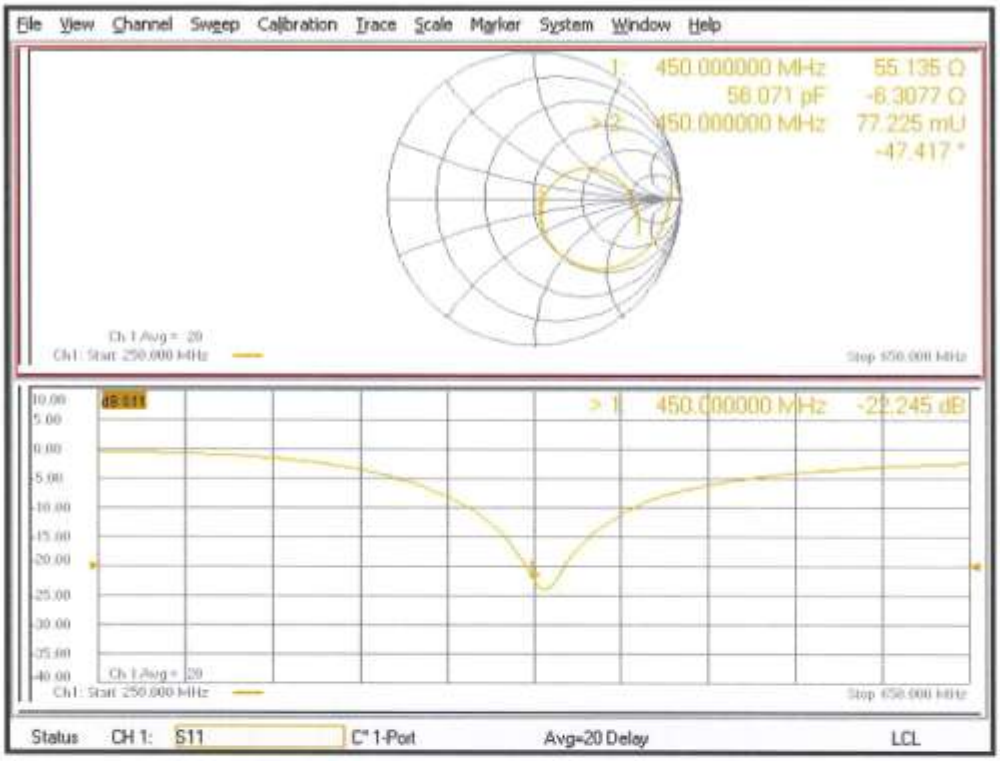
Dipole Calibration for Head Tissue/d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 39.23 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.79 W/kg
SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.772 W/kg
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid (> 30 mm)
Ratio of SAR at M2 to SAR at M1 = 64.4%
Maximum value of SAR (measured) = 1.56 W/kg



0 dB = 1.56 W/kg = 1.93 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 09.07.2021

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 450 MHz; Type: D450V3; Serial: D450V3 - SN:1077

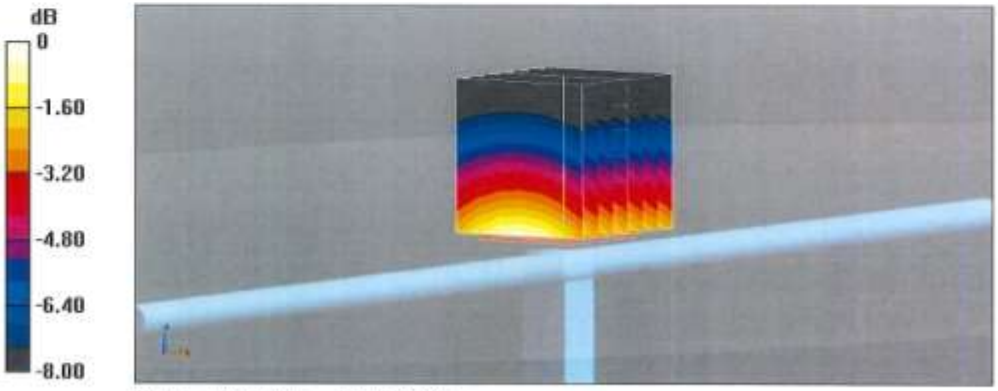
Communication System: UID 0 - CW; Frequency: 450 MHz
Medium parameters used: f = 450 MHz; σ = 0.93 S/m; ε_r = 56.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3877; ConvF(10.64, 10.64, 10.64) @ 450 MHz; Calibrated: 30.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn654; Calibrated: 28.06.2021
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1003
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

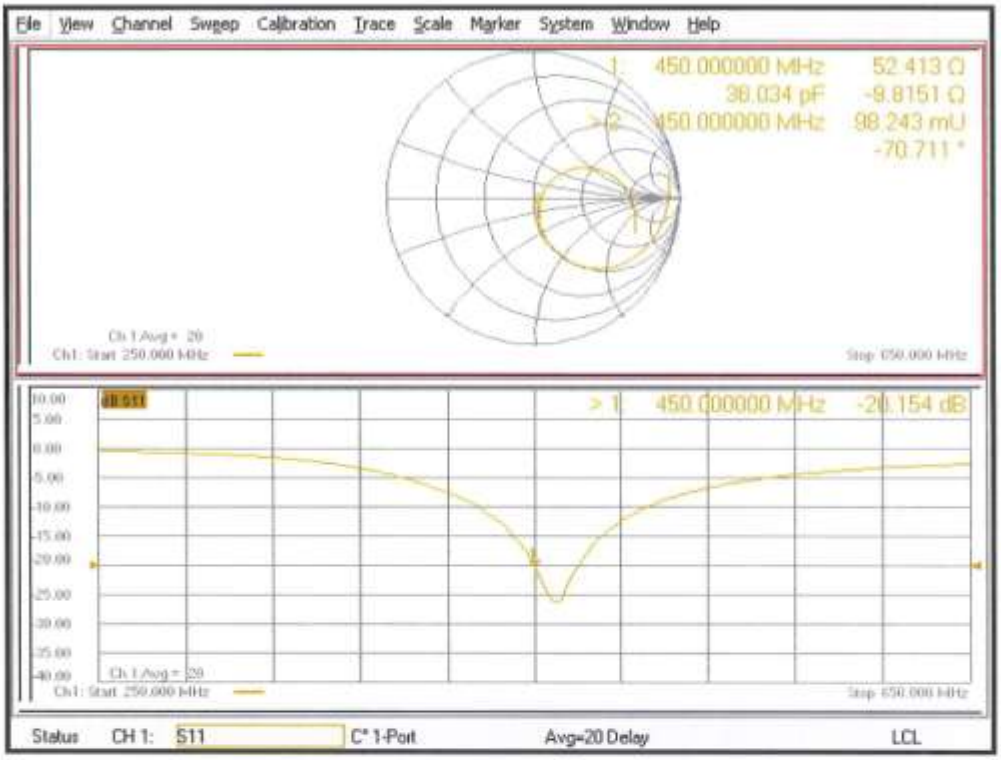
Dipole Calibration for Body Tissue/d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 42.26 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.76 W/kg
SAR(1 g) = 1.15 W/kg; SAR(10 g) = 0.774 W/kg
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid (> 30 mm)
Ratio of SAR at M2 to SAR at M1 = 65.5%
Maximum value of SAR (measured) = 1.54 W/kg



0 dB = 1.54 W/kg = 1.88 dBW/kg

Impedance Measurement Plot for Body TSL



Dipole Data

The table below includes dipole impedance and return loss measurement data measured by Motorola Solutions' EME lab. The results meet the requirements stated in KDB 865664.

Dipole 450-1054	**Head**			**Body**		
	Impedance		**Return Loss**	**Impedance**		**Return Loss**
Date Measured	**real Ω**	**imag jΩ**	**dB**	**real Ω**	**imag jΩ**	**dB**
04/08/19	59.46	-4.57	-20.36	56.02	-6.09	-21.87
04/13/20	57.08	-6.58	-20.38	56.08	-3.56	-24.43
04/26/21	54.62	-6.32	-22.56	52.47	-6.56	-21.36
Dipole 450-1077	**Head**			**Body**		
	Impedance		**Return Loss**	**Impedance**		**Return Loss**
Date Measured	**real Ω**	**imag jΩ**	**dB**	**real Ω**	**imag jΩ**	**dB**
08/06/21	48.59	-6.47	-23.86	48.12	-6.21	-21.70

Appendix D
System Verification Check Scans

Motorola Solutions, Inc. EME Laboratory

Date/Time: 10/23/2021 9:42:28 AM

Robot#: DASY5-PG-1 | Run#:	MHI-SYSP-450H-211023-09
Dipole Model#	D450V3
Phantom#:	ELI4 1103
Tissue Temp:	20.8 (C)
Serial#:	1077
Test Freq:	450.0000 (MHz)
Start Power:	250 (mW)
Rotation (1D):	0.049 dB
Adjusted SAR (1W):	4.92 mW/g (1g)

Comments:

Communication System Band: D450, Communication System UID: 0, Duty Cycle: 1:1,
Medium parameters used: f = 450 MHz; σ = 0.86 S/m; ε_r = 42.6; ρ = 1000 kg/m^3
Probe: EX3DV4 - SN7486, Calibrated: 6/18/2021, Frequency: 450 MHz, ConvF(11.24, 11.24, 11.24) @ 450 MHz
Electronics: DAE4 Sn1488, Calibrated: 4/7/2021

Below 2 GHz-Rev.3/System Performance Check/Dipole Area Scan 2 (41x221x1):

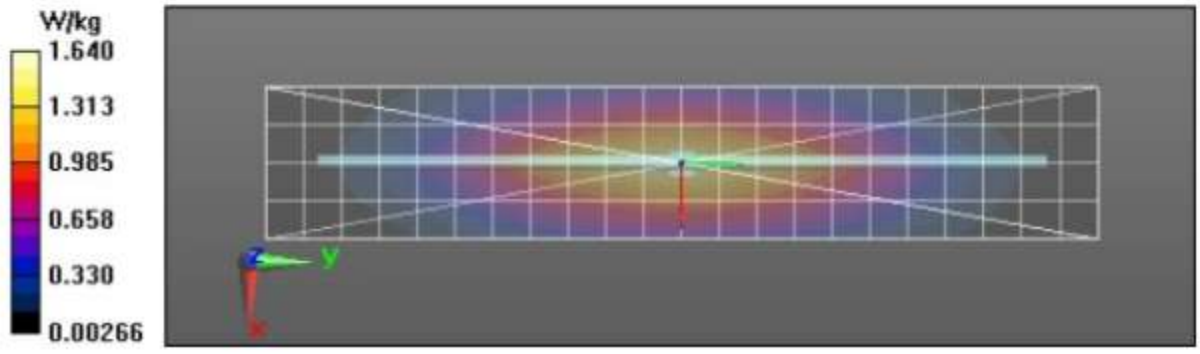
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 45.34 V/m; Power Drift = -0.09 dB
Fast SAR: SAR(1 g) = 1.32 W/kg; SAR(10 g) = 0.909 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 1.64 W/kg

Below 2 GHz-Rev.3/System Performance Check/0-Degree Cube (5x5x7)/Cube 0:

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 45.34 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.90 W/kg
SAR(1 g) = 1.23 W/kg; SAR(10 g) = 0.823 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 64.3%
Maximum value of SAR (measured) = 1.65 W/kg

Below 2 GHz-Rev.3/System Performance Check/Z-Axis Retraction (1x1x17):

Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 1.67 W/kg



Motorola Solutions, Inc. EME Laboratory

Date/Time: 10/24/2021 9:55:10 AM

Robot#: DASY5-PG-1 | Run#:	MHI-SYSP-450B-211024-12
Dipole Model#	D450V3
Phantom#:	ELI4 1028
Tissue Temp:	21.1 (C)
Serial#:	1077
Test Freq:	450.0000 (MHz)
Start Power:	250 (mW)
Rotation (1D):	0.055 dB
Adjusted SAR (1W):	4.84 mW/g (1g)

Comments:

Communication System Band: D450, Communication System UID: 0, Duty Cycle: 1:1,

Medium parameters used: f = 450 MHz; σ = 0.96 S/m; ε_r = 54.8; ρ = 1000 kg/m^3

Probe: EX3DV4 - SN7486, Calibrated: 6/18/2021, Frequency: 450 MHz, ConvF(11.4, 11.4, 11.4) @ 450 MHz
Electronics: DAE4 Sn1488, Calibrated: 4/7/2021

Below 2 GHz-Rev.3/System Performance Check/Dipole Area Scan 2 (41x221x1):

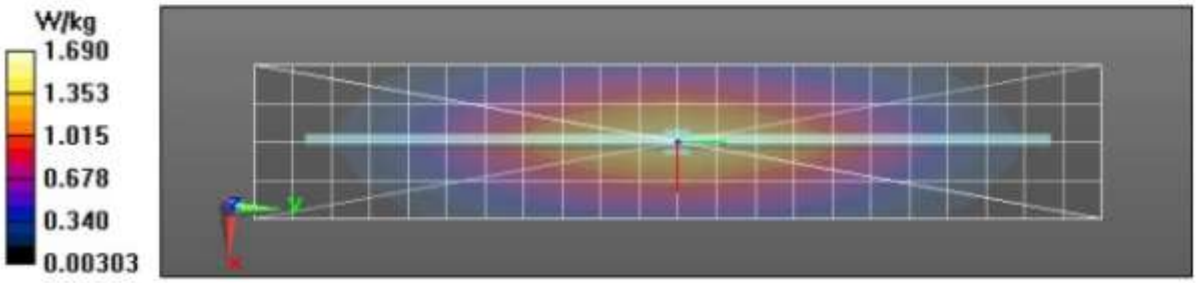
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 43.04 V/m; Power Drift = -0.09 dB
Fast SAR: SAR(1 g) = 1.31 W/kg; SAR(10 g) = 0.905 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 1.69 W/kg

Below 2 GHz-Rev.3/System Performance Check/0-Degree Cube (5x5x7)/Cube 0:

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 43.04 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.98 W/kg
SAR(1 g) = 1.21 W/kg; SAR(10 g) = 0.808 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 62.9%
Maximum value of SAR (measured) = 1.70 W/kg

Below 2 GHz-Rev.3/System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Maximum value of SAR (measured) = 1.69 W/kg



Motorola Solutions, Inc. EME Laboratory

Date/Time: 12/30/2021 9:31:22 PM

Robot#: DASY5-PG-3 | Run#:	BAD(DAN)-SYSP-450H-211230-09
Dipole Model#	D450V3
Phantom#:	ELI4 1022
Tissue Temp:	19.3 C)
Serial#:	1054
Test Freq:	450.0000 (MHz)
Start Power:	250 (mW)
Rotation (1D):	0.095 dB
Adjusted SAR (1W):	4.88 mW/g (1g)

Comments:

Duty Cycle: 1:1, Medium parameters used: f = 450 MHz; σ = 0.89 S/m; ε_r = 41.9; ρ = 1000 kg/m^3
Probe: EX3DV4 - SN7533, Calibrated: 4/19/2021, Frequency: 450 MHz, ConvF(11.86, 11.86, 11.86) @ 450 MHz
Electronics: DAE3 Sn374, Calibrated: 4/8/2021

Below 2 GHz-Rev.3/System Performance Check/Dipole Area Scan 2 (41x221x1):

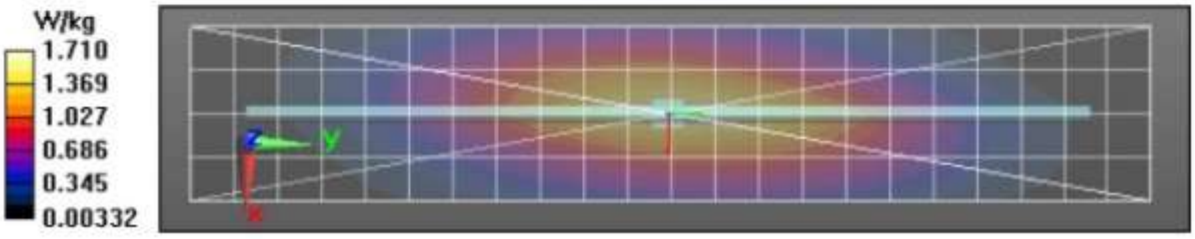
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 45.20 V/m; Power Drift = -0.12 dB
Fast SAR: SAR(1 g) = 1.33 W/kg; SAR(10 g) = 0.920 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 1.71 W/kg

Below 2 GHz-Rev.3/System Performance Check/0-Degree Cube (5x5x7)/Cube 0:

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 45.20 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 1.97 W/kg
SAR(1 g) = 1.22 W/kg; SAR(10 g) = 0.817 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 63.7%
Maximum value of SAR (measured) = 1.71 W/kg

Below 2 GHz-Rev.3/System Performance Check/Z-Axis Retraction (1x1x17): Measurement

grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 1.72 W/kg



Motorola Solutions, Inc. EME Laboratory

Date/Time: 12/31/2021 9:28:03 PM

Robot#: DASY5-PG-3 | Run#: BAD-SYSP-450H-211231-17
Dipole Model# D450V3
Phantom#: ELI4 1022
Tissue Temp: 19.2 (C)
Serial#: 1054
Test Freq: 450.0000 (MHz)
Start Power: 250 (mW)
Rotation (1D): 0.13 dB
Adjusted SAR (1W): 4.76 mW/g (1g)

Comments:

Communication System Band: Dipole 450, Communication System UID: 0, Duty Cycle: 1:1,
Medium parameters used: f = 450 MHz; σ = 0.89 S/m; ε_r = 42.7; ρ = 1000 kg/m^3
Probe: EX3DV4 - SN7533, Calibrated: 4/19/2021, Frequency: 450 MHz, ConvF(11.86, 11.86, 11.86) @ 450 MHz
Electronics: DAE3 Sn374, Calibrated: 4/8/2021

Below 2 GHz-Rev.3/System Performance Check/Dipole Area Scan 2 (41x221x1):

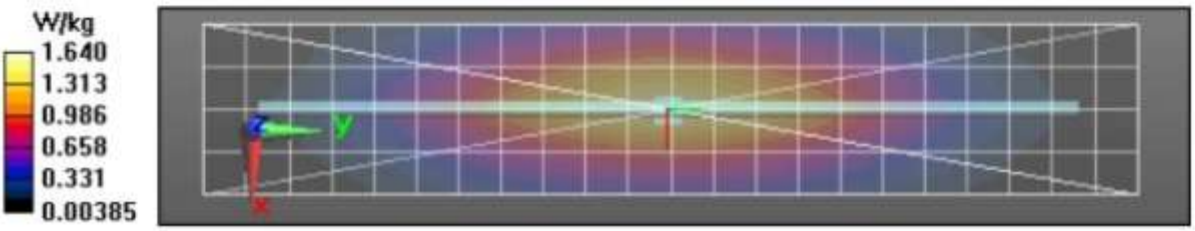
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 44.29 V/m; Power Drift = -0.03 dB
Fast SAR: SAR(1 g) = 1.29 W/kg; SAR(10 g) = 0.894 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 1.65 W/kg

Below 2 GHz-Rev.3/System Performance Check/0-Degree Cube (5x5x7)/Cube 0:

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 44.29 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.90 W/kg
SAR(1 g) = 1.19 W/kg; SAR(10 g) = 0.797 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 64%
Maximum value of SAR (measured) = 1.65 W/kg

Below 2 GHz-Rev.3/System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Maximum value of SAR (measured) = 1.67 W/kg



Motorola Solutions, Inc. EME Laboratory

Date/Time: 1/3/2022 9:40:38 AM

Robot#: DASY5-PG-3 | Run#:	BAD-SYSP-450H-220103-01
Dipole Model#	D450V3
Phantom#:	ELI4 1022
Tissue Temp:	18.7 (C)
Serial#:	1054
Test Freq:	450.0000 (MHz)
Start Power:	250 (mW)
Rotation (1D):	0.11 dB
Adjusted SAR (1W):	4.80 mW/g (1g)

Comments:

Communication System Band: Dipole 450, Communication System UID: 0, Duty Cycle: 1:1,

Medium parameters used: f = 450 MHz; σ = 0.88 S/m; ε_r = 42.5; ρ = 1000 kg/m^3

Probe: EX3DV4 - SN7533, Calibrated: 4/19/2021, Frequency: 450 MHz, ConvF(11.86, 11.86, 11.86) @ 450 MHz
Electronics: DAE3 Sn374, Calibrated: 4/8/2021

Below 2 GHz-Rev.3/System Performance Check/Dipole Area Scan 2 (41x221x1):

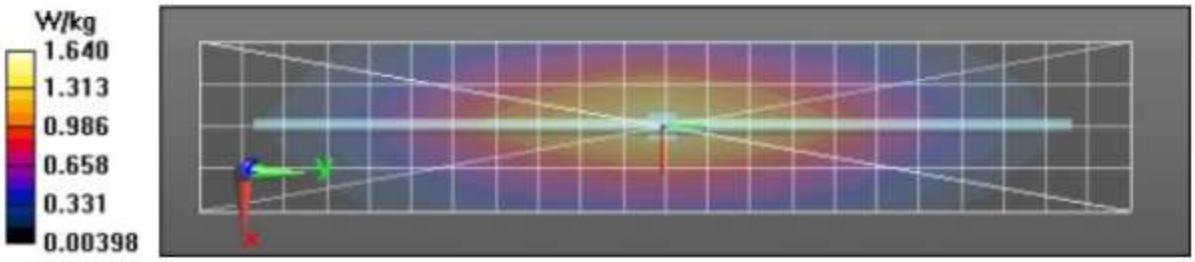
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 44.44 V/m; Power Drift = -0.14 dB
Fast SAR: SAR(1 g) = 1.29 W/kg; SAR(10 g) = 0.891 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 1.65 W/kg

Below 2 GHz-Rev.3/System Performance Check/0-Degree Cube (5x5x7)/Cube 0:

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 44.44 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 1.89 W/kg
SAR(1 g) = 1.2 W/kg; SAR(10 g) = 0.799 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 64.2%
Maximum value of SAR (measured) = 1.65 W/kg

Below 2 GHz-Rev.3/System Performance Check/Z-Axis Retraction (1x1x17): Measurement

grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 1.62 W/kg



Appendix E
DUT Scans

TDMA Digital Mode – Assessment at the Body
Table 17

Motorola Solutions, Inc. EME Laboratory
Date/Time: 10/24/2021 11:12:59 AM

Robot#: DASY5-PG-1 | Run#: MHI-AB-211024-14

Model#:	AAH88QCP9JA2AN (PMUE4541B)
Phantom#:	ELI4 1028
Tissue Temp:	21.1 (C)
Serial#:	546TXV0351
Antenna:	PMAE4095B
Test Freq:	458.3000 (MHz)
Battery:	PMNN4468B
Carry Acc:	PMLN7190A
Audio Acc:	PMLN7156A
Start Power:	3.22 (W)

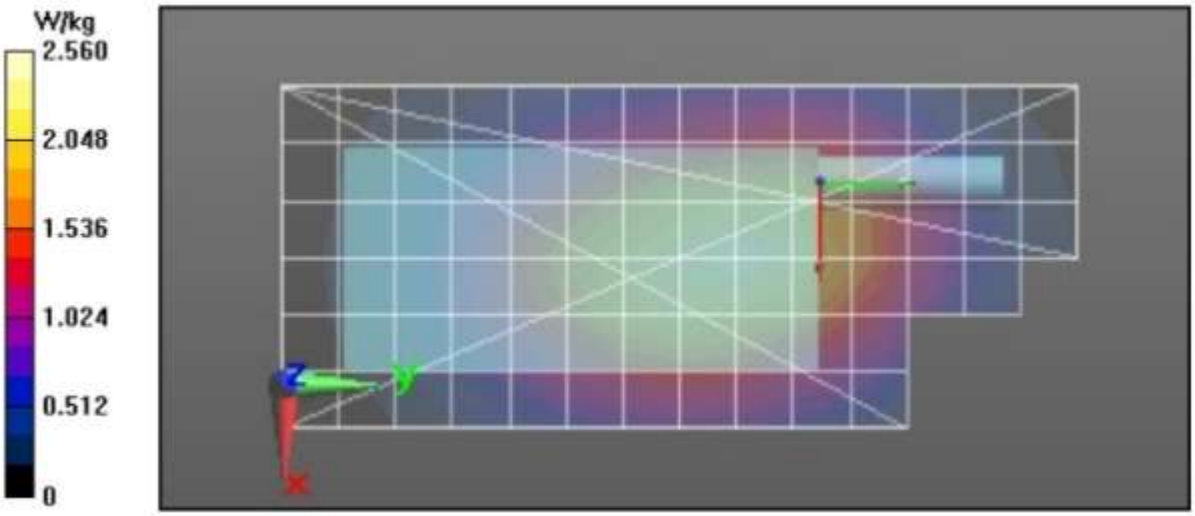
Comments:

Communication System Band: Tonga UHF, Communication System UID: 0, Duty Cycle: 1:1.99986,
Medium parameters used: f = 458 MHz; σ = 0.97 S/m; ε_r = 54.7; ρ = 1000 kg/m^3
Probe: EX3DV4 - SN7486, Calibrated: 6/18/2021, Frequency: 458.3 MHz, ConvF(11.4, 11.4, 11.4) @ 458.3 MHz
Electronics: DAE4 Sn1488, Calibrated: 4/7/2021

Below 2 GHz-Rev.3/Ab Scan/1-Area Scan (61x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 45.22 V/m; Power Drift = -0.40 dB
Fast SAR: SAR(1 g) = 2.06 W/kg; SAR(10 g) = 1.47 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 2.56 W/kg

Below 2 GHz-Rev.3/Ab Scan/3-Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 45.22 V/m; Power Drift = -0.49 dB
Peak SAR (extrapolated) = 2.66 W/kg
SAR(1 g) = 1.88 W/kg; SAR(10 g) = 1.37 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 70.8%
Maximum value of SAR (measured) = 2.39 W/kg

Below 2 GHz-Rev.3/Ab Scan/4-Z-Axis Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 2.28 W/kg



TDMA Digital Mode – Assessment at the Face
Table 17

Motorola Solutions, Inc. EME Laboratory
Date/Time: 10/24/2021 1:52:36 AM

Robot#: DASY5-PG-1 | Run#:	AF-FACE-211024-04#
Model#:	AAH88QCP9JA2AN (PMUE4541B)
Phantom#:	ELI4 1103
Tissue Temp:	21.4 (C)
Serial#:	546TXV0351
Antenna:	PMAE4093B
Test Freq:	425.0000 (MHz)
Battery:	PMNN4468B
Carry Acc:	NONE
Audio Acc:	NONE
Start Power:	3.15 (W)

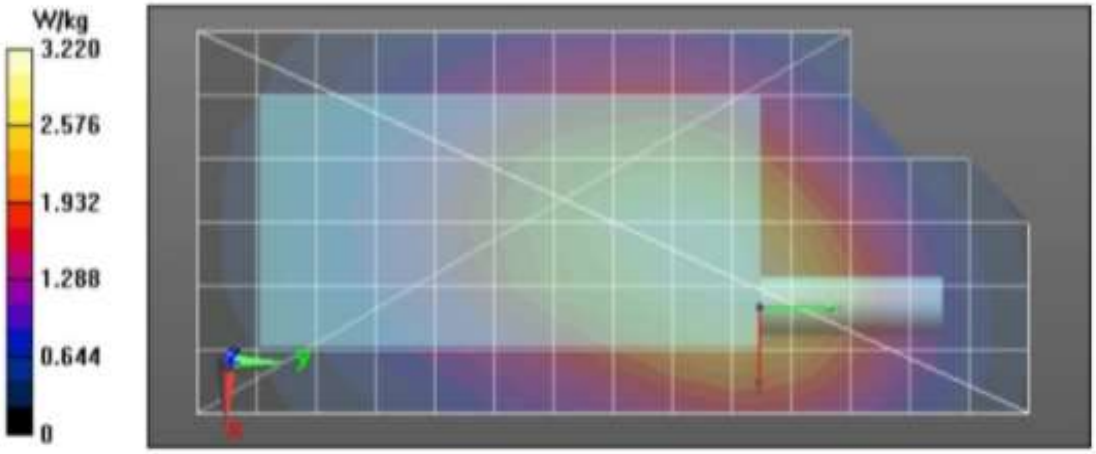
Comments:

Communication System Band: Tonga UHF, Communication System UID: 0, Duty Cycle: 1:1.99986,
Medium parameters used: f = 425 MHz; σ = 0.84 S/m; ε_r = 43.1; ρ = 1000 kg/m^3
Probe: EX3DV4 - SN7486, Calibrated: 6/18/2021, Frequency: 425 MHz, ConvF(11.24, 11.24, 11.24) @ 425 MHz
Electronics: DAE4 Sn1488, Calibrated: 4/7/2021

Below 2 GHz-Rev.3/Face Scan/1-Area Scan (61x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 63.02 V/m; Power Drift = -0.29 dB
Fast SAR: SAR(1 g) = 2.73 W/kg; SAR(10 g) = 1.98 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 3.27 W/kg

Below 2 GHz-Rev.3/Face Scan/3-Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 63.02 V/m; Power Drift = -0.49 dB
Peak SAR (extrapolated) = 3.62 W/kg
SAR(1 g) = 2.59 W/kg; SAR(10 g) = 1.9 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 69%
Maximum value of SAR (measured) = 3.20 W/kg

Below 2 GHz-Rev.3/Face Scan/4-Z-Axis Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 3.04 W/kg



FM Analog Mode
Assessments at the Body with Body-worn PMLN7190A
Table 19

Motorola Solutions, Inc. EME Laboratory
Date/Time: 12/30/2021 11:34:17 AM

Robot#: DASY5-PG-3 | Run#: AR-AB-211230-05#
Model#: PMUE4541A
Phantom#: ELI4 1022
Tissue Temp: 19.0 (C)
Serial#: 546TQM0138
Antenna: PMAE4094B
Test Freq: 435.0000 (MHz)
Battery: PMNN4468B
Carry Acc: PMLN7190A
Audio Acc: PMLN7156A
Start Power: 2.40 (W)

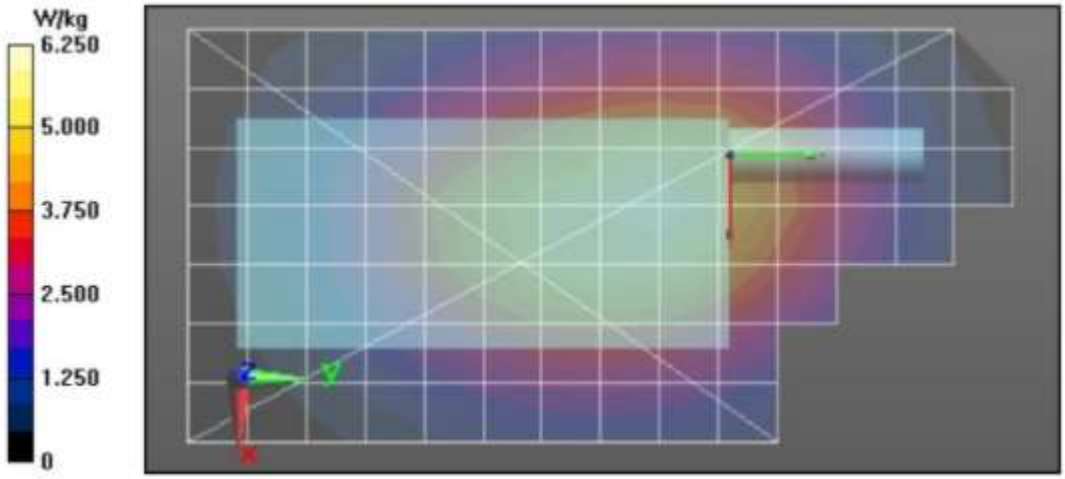
Comments:

Communication System Band: Tonga UHF Plus1, Communication System UID: 0, Duty Cycle: 1:1,
Medium parameters used: f = 435 MHz; σ = 0.88 S/m; ε_r = 42.4; ρ = 1000 kg/m^3
Probe: EX3DV4 - SN7533, Calibrated: 4/19/2021, Frequency: 435 MHz, ConvF(11.86, 11.86, 11.86) @ 435 MHz
Electronics: DAE3 Sn374, Calibrated: 4/8/2021

Below 2 GHz-Rev.3/Ab Scan/1-Area Scan (71x161x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 77.10 V/m; Power Drift = -0.53 dB
Fast SAR: SAR(1 g) = 5.08 W/kg; SAR(10 g) = 3.67 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 6.29 W/kg

Below 2 GHz-Rev.3/Ab Scan/3-Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 77.10 V/m; Power Drift = -0.62 dB
Peak SAR (extrapolated) = 6.64 W/kg
SAR(1 g) = 4.84 W/kg; SAR(10 g) = 3.55 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 72.6%
Maximum value of SAR (measured) = 6.07 W/kg

Below 2 GHz-Rev.3/Ab Scan/4-Z-Axis Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 6.01 W/kg



FM Analog Mode
Assessments at the Body with Body-worn PMLN7128A
Table 20

Motorola Solutions, Inc. EME Laboratory
Date/Time: 12/30/2021 8:37:19 PM

Robot#: DASY5-PG-3 | Run#: BAD(DAN)-AB-211230-08#
Model#: PMUE4541A
Phantom#: ELI4 1022
Tissue Temp: 19.2 (C)
Serial#: 546TQM0138
Antenna: PMAE4094B
Test Freq: 435.0000 (MHz)
Battery: PMNN4468B
Carry Acc: PMLN7128A
Audio Acc: PMLN7156A
Start Power: 2.40 (W)

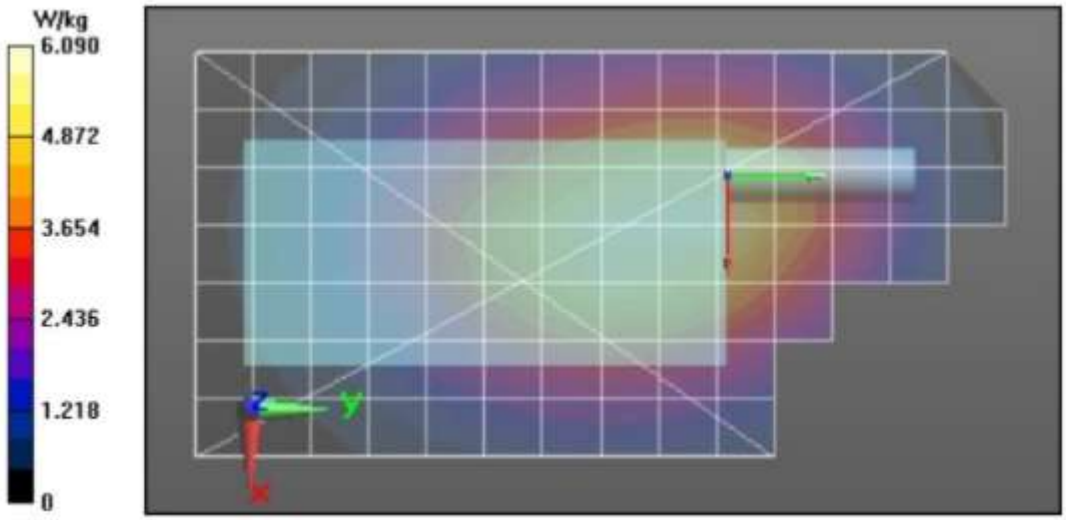
Comments:

Duty Cycle: 1:1, Medium parameters used: f = 435 MHz; σ = 0.88 S/m; ε_r = 42.4; ρ = 1000 kg/m^3
Probe: EX3DV4 - SN7533, Calibrated: 4/19/2021, Frequency: 435 MHz, ConvF(11.86, 11.86, 11.86) @ 435 MHz
Electronics: DAE3 Sn374, Calibrated: 4/8/2021

Below 2 GHz-Rev.3/Ab Scan/1-Area Scan (71x161x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 80.53 V/m; Power Drift = -0.42 dB
Fast SAR: SAR(1 g) = 5 W/kg; SAR(10 g) = 3.62 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 6.22 W/kg

Below 2 GHz-Rev.3/Ab Scan/3-Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 80.53 V/m; Power Drift = -0.51 dB
Peak SAR (extrapolated) = 6.70 W/kg
SAR(1 g) = 4.75 W/kg; SAR(10 g) = 3.49 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 70.3%
Maximum value of SAR (measured) = 6.04 W/kg

Below 2 GHz-Rev.3/Ab Scan/4-Z-Axis Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 5.91 W/kg



FM Analog Mode
Assessments at the Face
Table 22

Motorola Solutions, Inc. EME Laboratory
Date/Time: 12/31/2021 12:40:04 AM

Robot#: DASY5-PG-3 | Run#: MA(BAD)-FACE-211231-02#
Model#: PMUE4541A
Phantom#: ELI4 1022
Tissue Temp: 19.0 (C)
Serial#: 546TQM0138
Antenna: PMAE4093B
Test Freq: 425.0000 (MHz)
Battery: PMNN4468B
Carry Acc: @ front
Audio Acc: N/A
Start Power: 2.40 (W)

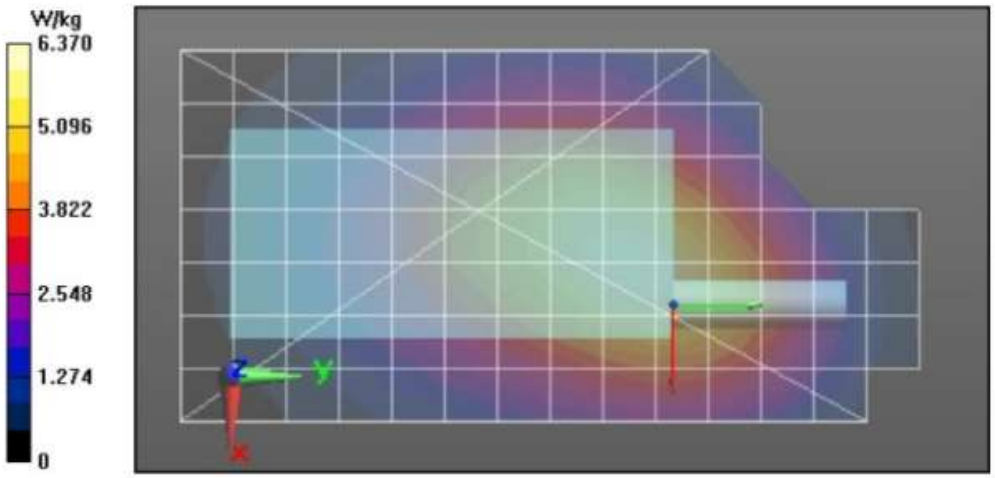
Comments:

Duty Cycle: 1:1, Medium parameters used: f = 425 MHz; σ = 0.87 S/m; ε_r = 42.5; ρ = 1000 kg/m^3
Probe: EX3DV4 - SN7533, Calibrated: 4/19/2021, Frequency: 425 MHz, ConvF(11.86, 11.86, 11.86) @ 425 MHz
Electronics: DAE3 Sn374, Calibrated: 4/8/2021

Below 2 GHz-Rev.3/Face Scan/1-Area Scan (71x151x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 83.06 V/m; Power Drift = -0.32 dB
Fast SAR: SAR(1 g) = 5.25 W/kg; SAR(10 g) = 3.82 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 6.46 W/kg

Below 2 GHz-Rev.3/Face Scan/3-Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 83.06 V/m; Power Drift = -0.42 dB
Peak SAR (extrapolated) = 6.79 W/kg
SAR(1 g) = 4.9 W/kg; SAR(10 g) = 3.59 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 71.9%
Maximum value of SAR (measured) = 6.12 W/kg

Below 2 GHz-Rev.3/Face Scan/4-Z-Axis Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 6.08 W/kg



FM Analog mode
Assessment for ISED - Body
Table 24

Motorola Solutions, Inc. EME Laboratory
Date/Time: 12/31/2021 4:15:20 AM

Robot#: DASY5-PG-3 | Run#: MA(BAD)-AB-211231-06#
Model#: PMUE4541A
Phantom#: ELI4 1022
Tissue Temp: 19.2 (C)
Serial#: 546TQM0138
Antenna: PMAE4094B
Test Freq: 430.0000 (MHz)
Battery: PMNN4468B
Carry Acc: PMLN7190A
Audio Acc: PMLN7156A
Start Power: 2.40 (W)

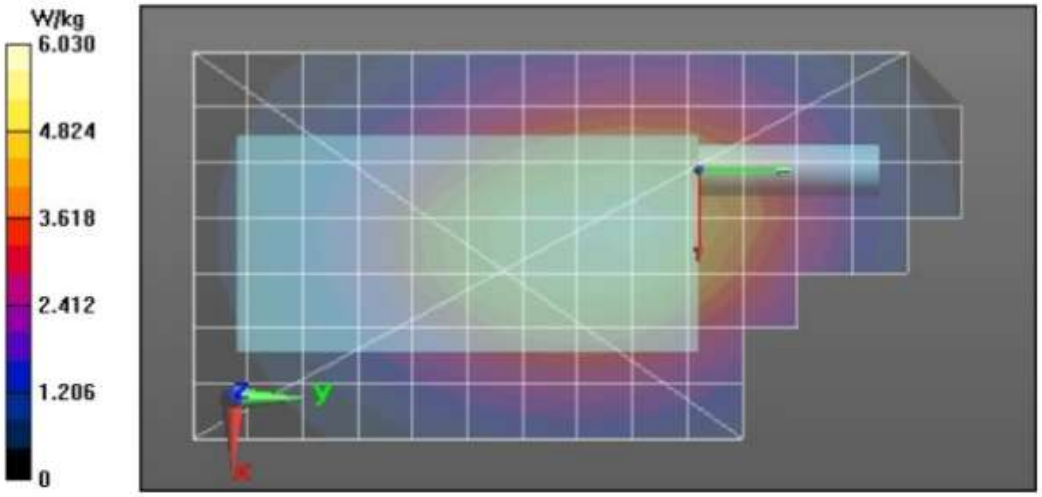
Comments:

Communication System Band: Tonga UHF Plus1, Communication System UID: 0, Duty Cycle: 1:1,
Medium parameters used: f = 430 MHz; σ = 0.87 S/m; ε_r = 42.4; ρ = 1000 kg/m^3
Probe: EX3DV4 - SN7533, Calibrated: 4/19/2021, Frequency: 430 MHz, ConvF(11.86, 11.86, 11.86) @ 430 MHz
Electronics: DAE3 Sn374, Calibrated: 4/8/2021

Below 2 GHz-Rev.3/Ab Scan/1-Area Scan (71x161x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 75.10 V/m; Power Drift = -0.51 dB
Fast SAR: SAR(1 g) = 4.93 W/kg; SAR(10 g) = 3.58 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 6.10 W/kg

Below 2 GHz-Rev.3/Ab Scan/3-Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 75.10 V/m; Power Drift = -0.60 dB
Peak SAR (extrapolated) = 6.56 W/kg
SAR(1 g) = 4.65 W/kg; SAR(10 g) = 3.41 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 70.9%
Maximum value of SAR (measured) = 5.91 W/kg

Below 2 GHz-Rev.3/Ab Scan/4-Z-Axis Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 5.86 W/kg



FM Analog mode
Assessment for ISED at Face
Table 24

Motorola Solutions, Inc. EME Laboratory
Date/Time: 12/31/2021 12:40:04 AM

Robot#: DASY5-PG-3 | Run#: MA(BAD)-FACE-211231-02#
Model#: PMUE4541A
Phantom#: ELI4 1022
Tissue Temp: 19.0 (C)
Serial#: 546TQM0138
Antenna: PMAE4093B
Test Freq: 425.0000 (MHz)
Battery: PMNN4468B
Carry Acc: @ front
Audio Acc: N/A
Start Power: 2.40 (W)

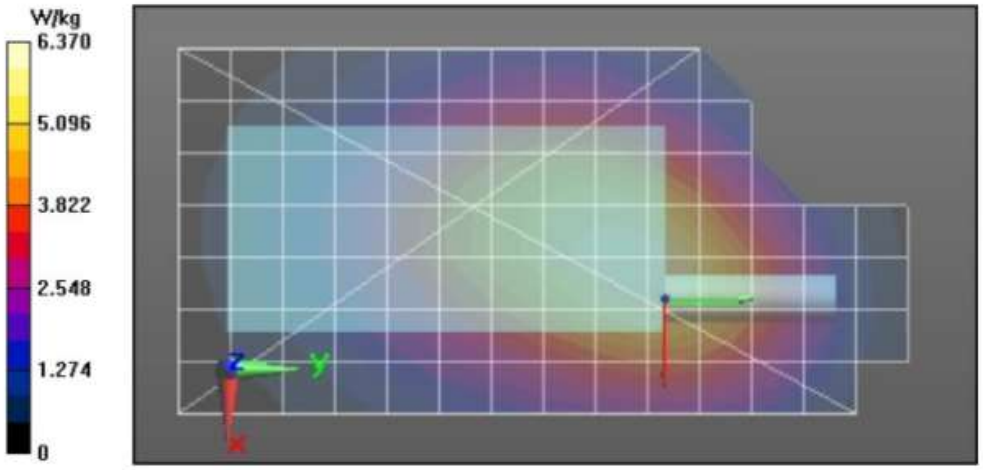
Comments:

Duty Cycle: 1:1, Medium parameters used: f = 425 MHz; σ = 0.87 S/m; ε_r = 42.5; ρ = 1000 kg/m^3
Probe: EX3DV4 - SN7533, Calibrated: 4/19/2021, Frequency: 425 MHz, ConvF(11.86, 11.86, 11.86) @ 425 MHz
Electronics: DAE3 Sn374, Calibrated: 4/8/2021

Below 2 GHz-Rev.3/Face Scan/1-Area Scan (71x151x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 83.06 V/m; Power Drift = -0.32 dB
Fast SAR: SAR(1 g) = 5.25 W/kg; SAR(10 g) = 3.82 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 6.46 W/kg

Below 2 GHz-Rev.3/Face Scan/3-Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 83.06 V/m; Power Drift = -0.42 dB
Peak SAR (extrapolated) = 6.79 W/kg
SAR(1 g) = 4.9 W/kg; SAR(10 g) = 3.59 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 71.9%
Maximum value of SAR (measured) = 6.12 W/kg

Below 2 GHz-Rev.3/Face Scan/4-Z-Axis Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 6.08 W/kg



APPENDIX F
Shortened Scan of Highest SAR configuration

Shorten Scan Assessment
Table 25

Motorola Solutions, Inc. EME Laboratory
Date/Time: 1/3/2022 4:52:45 PM

Robot#: DASY5-PG-3 | Run#: BAD-AB-220103-10
Model#: PMUE4541A
Phantom#: ELI4 1022
Tissue Temp: 19.5 (C)
Serial#: 546TQM0138
Antenna: PMAE4094B
Test Freq: 435.0000 (MHz)
Battery: PMNN4468B
Carry Acc: PMLN7190A
Audio Acc: PMLN7156A
Start Power: 2.40 (W)

Comments:

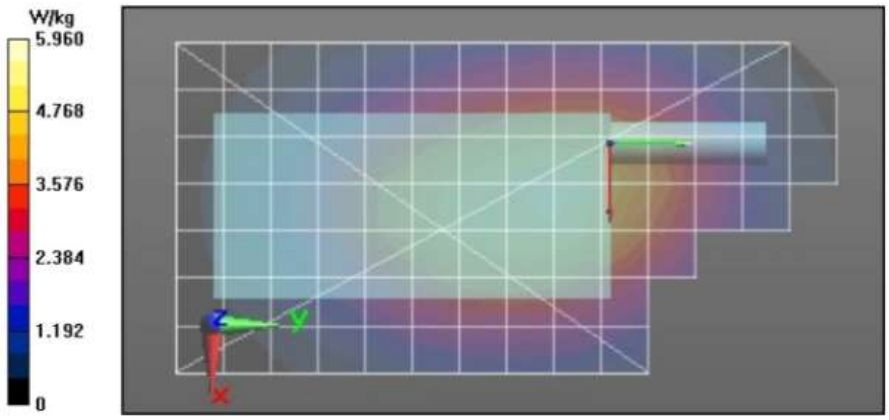
Communication System Band: Tonga UHF Plus1, Communication System UID: 0, Duty Cycle: 1:1,
Medium parameters used: f = 435 MHz; σ = 0.87 S/m; ε_r = 42.8; ρ = 1000 kg/m^3
Probe: EX3DV4 - SN7533, Calibrated: 4/19/2021, Frequency: 435 MHz, ConvF(11.86, 11.86, 11.86) @ 435 MHz
Electronics: DAE3 Sn374, Calibrated: 4/8/2021

Below 2 GHz-Rev.3/Ab Scan/1-Area Scan (71x161x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 75.05 V/m; Power Drift = -0.59 dB
Fast SAR: SAR(1 g) = 4.88 W/kg; SAR(10 g) = 3.53 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 6.04 W/kg

Below 2 GHz-Rev.3/Ab Scan/2-Volume 2D Scan (41x41x1): Interpolated grid: dx=0.7500 mm, dy=0.7500 mm, dz=1.000 mm
Reference Value = 75.05 V/m; Power Drift = -0.62 dB
Fast SAR: SAR(1 g) = 4.79 W/kg; SAR(10 g) = 3.48 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 5.90 W/kg

Below 2 GHz-Rev.3/Ab Scan/3-Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 89.38 V/m; Power Drift = -0.34 dB
Peak SAR (extrapolated) = 7.01 W/kg
SAR(1 g) = 5.04 W/kg; SAR(10 g) = 3.68 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 71.6%
Maximum value of SAR (measured) = 6.36 W/kg

Below 2 GHz-Rev.3/Ab Scan/4-Z-Axis Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 5.78 W/kg



Shortened scan reflects highest SAR producing configuration and is compared to the full scan.

Scan Description	Referenced Table	Test Time (min.)	SAR 1g (W/kg)
Shorten scan (zoom)	20	9	2.73
Full scan (area & zoom)	17	30	2.79

APPENDIX G
DUT Test Position Photos

1.0 Highest SAR Test Position per body location

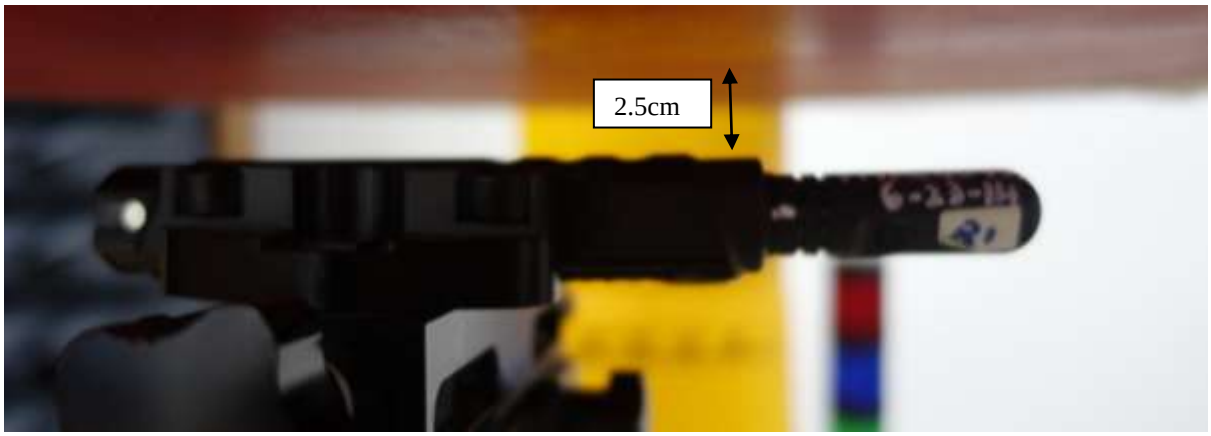
1.1 Body LMR

DUT with antenna PMAE4094B, battery PMNN4468B against the phantom and with bodyworn PMLN7190A and audio PMLN7156A attached.

Antenna kit #	Separation Distances (mm)		
	@ bottom surface of DUT	@ base of antenna	@ tip of antenna
PMAE4094B	10	28	31

1.2 Face LMR

DUT with antenna PMAE4093B, battery PMNN4468B and radio position at 2.5cm from the phantom and at front.



Antenna kit #	Separation Distances (mm)		
	@ bottom surface of DUT	@ base of antenna	@ tip of antenna
PMAE4093B	28	29	29

APPENDIX H
DUT, Body worn and audio accessories Photos

Please refer to original filling report