

**MOTOROLA SOLUTIONS**
MS ISO/IEC 17025
TESTING
SAMM No.0826
DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 2 of 2**Motorola Solutions Inc.****EME Test Laboratory**

Motorola Solutions Malaysia Sdn Bhd (Innoplex)
 Plot 2A, Medan Bayan Lepas,
 Mukim 12 SWD 11900 Bayan Lepas Penang, Malaysia.

Date of Report: 10/24/2018**Report Revision: C**

Responsible Engineer: Veeramani Veerapan
Report Author: Veeramani Veerapan
Date/s Tested: 8/28/2018-9/17/2018
Manufacturer: Motorola Solutions Inc.
DUT Description: Handheld Portable – DTR700, 1 Watt, 900 MHz, 50CH
Test TX mode(s): CW (PTT)
Max. Power output: 1.0 W
Nominal Power: 1.0 W
Tx Frequency Bands: 902-928MHz
Signaling type: FSK
Model(s) Tested: DTS150NBDLAA (PMUF1955A)
Model(s) Certified: DTS150NBDLAA (PMUF1955A), DTS130NBDLAA (PMUF1953A)
Serial Number(s): 379TUR0031 and 379TUR0009
Classification: Occupational / Controlled

FCC ID: AZ489FT5874; 902-928MHz

IC: 109U-89FT5874; 902-928MHz

ISED Test Site registration: 109AK
FCC Test Firm Registration Number: 823256

The test results clearly demonstrate compliance with FCC General Population/Uncontrolled RF Exposure limits of 1.6 W/kg averaged over 1 gram per the requirements of FCC 47 CFR § 2.1093 and ISED 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. 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.

Tiong Nguk Ing
Deputy Technical Manager (Approved Signatory)
Approval Date: 10/24/2018

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: **D900V2-1d026_Jan17**

CALIBRATION CERTIFICATE

Object **D900V2 - SN:1d026**

Calibration procedure(s) **QA CAL-05.v9**
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **January 18, 2017**

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	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Type-N mismatch combination	SN: 5047.2 / 06327	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 7349	31-Dec-16 (No. EX3-7349_Dec16)	Dec-17
DAE4	SN: 601	04-Jan-17 (No. DAE4-601_Jan17)	Jan-18
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

	Name	Function	Signature
Calibrated by:	Johannes Kurikka	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 20, 2017

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

Certificate No: D900V2-1d026_Jan17

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**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)

Accreditation No.: **SCS 0108**

The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

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:

- 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
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- 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
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- 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	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	900 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.97 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	41.2 $\pm$ 6 %	0.94 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.66 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	10.9 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.70 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	6.92 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.0	1.05 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	53.8 $\pm$ 6 %	1.02 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	---	---

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.71 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	11.0 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.75 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	7.10 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)**Antenna Parameters with Head TSL**

Impedance, transformed to feed point	50.6 Ω - 0.2 j Ω
Return Loss	- 43.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.7 Ω - 2.3 j Ω
Return Loss	- 27.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.395 ns
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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
Manufactured on	February 08, 2005

DASY5 Validation Report for Head TSL

Date: 16.01.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:1d026

Communication System: UID 0 - CW; Frequency: 900 MHz

Medium parameters used: $f = 900$ MHz; $\sigma = 0.94$ S/m; $\epsilon_r = 41.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.7, 9.7, 9.7); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.01.2017
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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

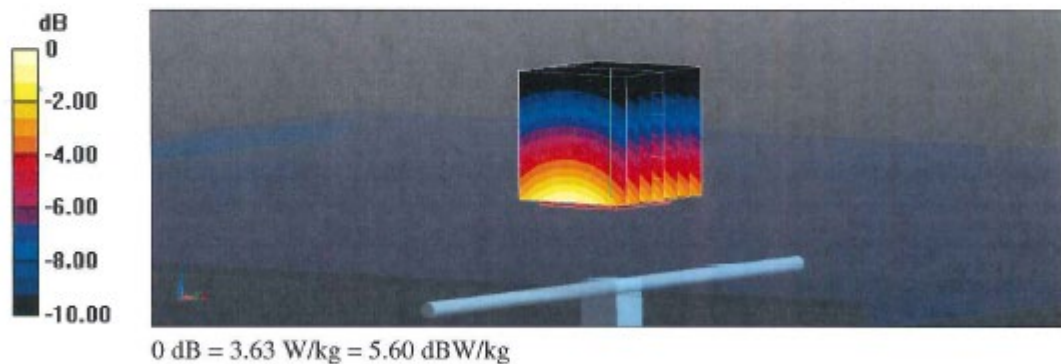
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 64.94 V/m; Power Drift = 0.01 dB

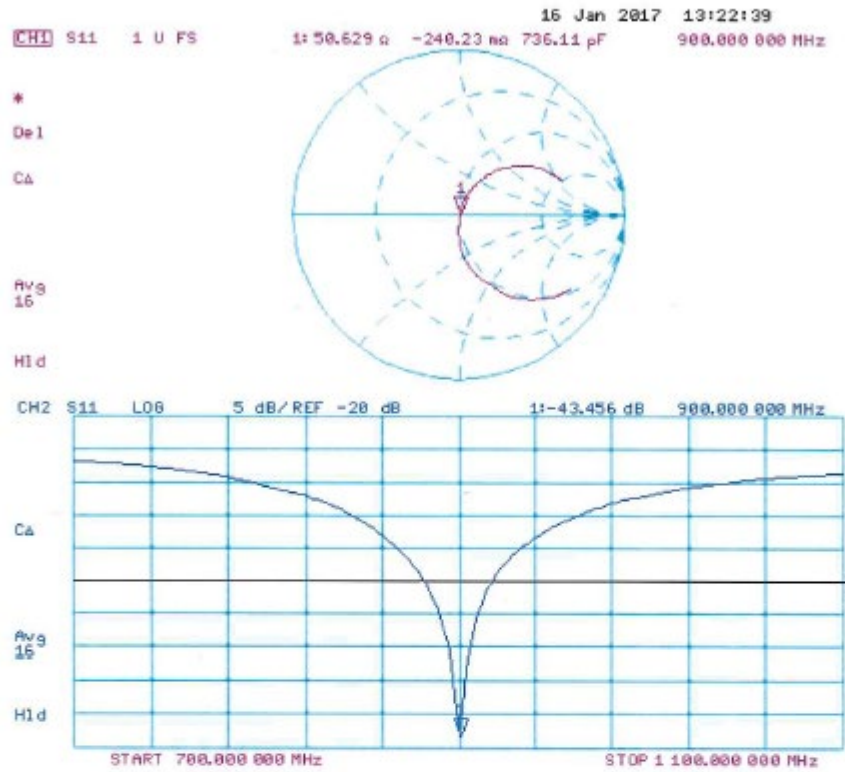
Peak SAR (extrapolated) = 4.18 W/kg

SAR(1 g) = 2.66 W/kg; SAR(10 g) = 1.7 W/kg

Maximum value of SAR (measured) = 3.63 W/kg



Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 18.01.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:1d026

Communication System: UID 0 - CW; Frequency: 900 MHz

Medium parameters used: $f = 900 \text{ MHz}$; $\sigma = 1.02 \text{ S/m}$; $\epsilon_r = 53.8$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.64, 9.64, 9.64); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.01.2017
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

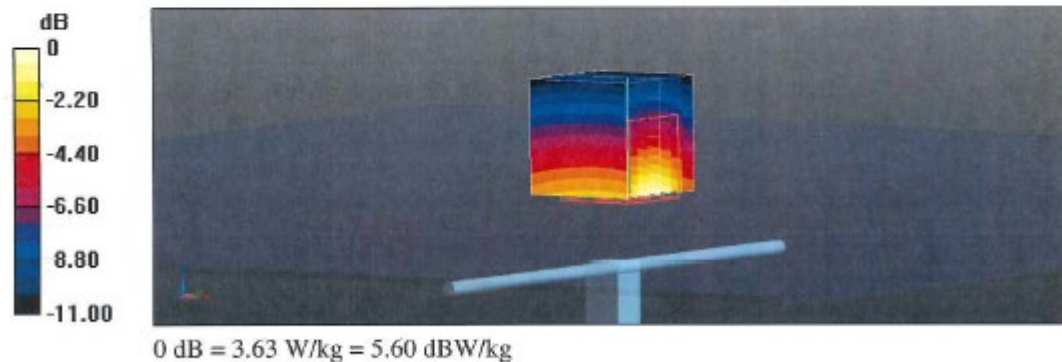
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 62.82 V/m; Power Drift = -0.01 dB

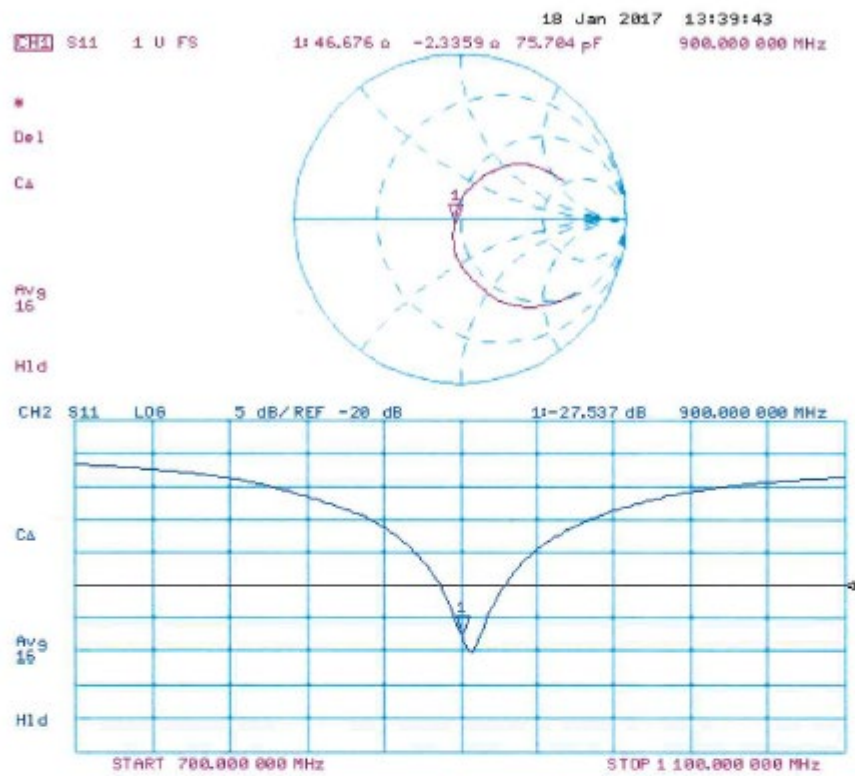
Peak SAR (extrapolated) = 4.11 W/kg

SAR(1 g) = 2.71 W/kg; SAR(10 g) = 1.75 W/kg

Maximum value of SAR (measured) = 3.63 W/kg



Impedance Measurement Plot for Body TSL



Dipole Data

As stated in KDB 865664, only dipoles used for longer calibration intervals required to provide supporting information and measurement to qualify for extended calibration interval.

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 900-1d026	Head			Body		
	Impedance		Return Loss	Impedance		Return Loss
Date Measured	real Ω	imag $j\Omega$	dB	real Ω	imag $j\Omega$	dB
3/09/2017	51.01	-3.07	-38.70	48.23	3.50	-27.73
02/27/2018	50.00	0.61	-44.37	48.22	2.37	-29.83

Appendix D

System Verification Check Scans

Motorola Solutions, Inc. EME Laboratory

Date/Time: 8/28/2018 7:48:37 PM

Robot#: DASY5-PG-4 | Run#: ZZ-SYSP-900B-180828-01
Dipole Model#: D900V2
Phantom#: ELI4 1108
Tissue Temp: 21.4 (C)
Serial#: 1d026
Test Freq: 900.000 (MHz)
Start Power: 250 (mW)
Rotation (1D): 0.058 dB
Adjusted SAR (1W): 10.32 mW/g (1g)

Comments:

Duty Cycle: 1:1, Medium parameters used: $f = 900$ MHz; $\sigma = 1.09$ S/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³
Probe: ES3DV3 - SN3122, , Frequency: 900 MHz, ConvF(6.22, 6.22, 6.22); Calibrated: 4/18/2018
Electronics: DAE4 Sn850, Calibrated: 3/7/2018

Below 2 GHz-Rev.2/System Performance Check/Dipole Area Scan 2 (41x121x1):

Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 55.63 V/m; Power Drift = -0.04 dB

Fast SAR: SAR(1 g) = 2.61 W/kg; SAR(10 g) = 1.71 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 3.16 W/kg

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

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 55.63 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 4.02 W/kg

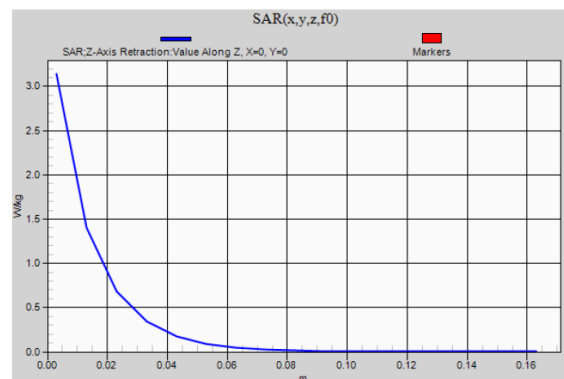
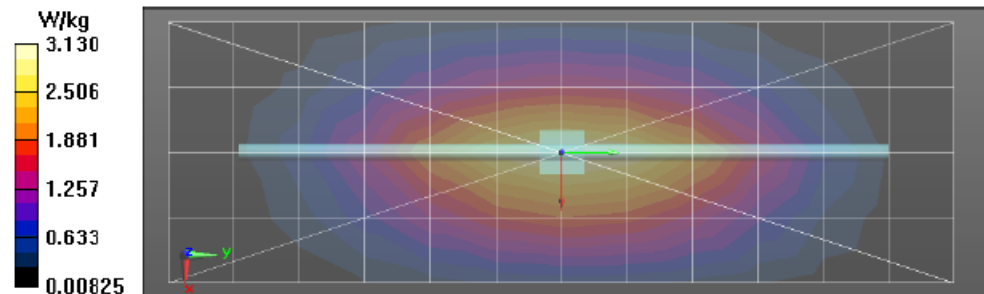
SAR(1 g) = 2.58 W/kg; SAR(10 g) = 1.67 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 3.15 W/kg

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

grid: dx=20mm, dy=20mm, dz=10mm

Maximum value of SAR (measured) = 3.14 W/kg



Motorola Solutions, Inc. EME Laboratory

Date/Time: 8/29/2018 3:54:46 PM

Robot#: DASY5-PG-4 | Run#: LOH-SYSP-900B-180829-01
Dipole Model# D900V2
Phantom#: ELI4 1108
Tissue Temp: 20.9(C)
Serial#: 1d026
Test Freq: 900.000 (MHz)
Start Power: 250 (mW)
Rotation (1D): 0.091dB
Adjusted SAR (1W): 10.60 mW/g (1g)

Comments:

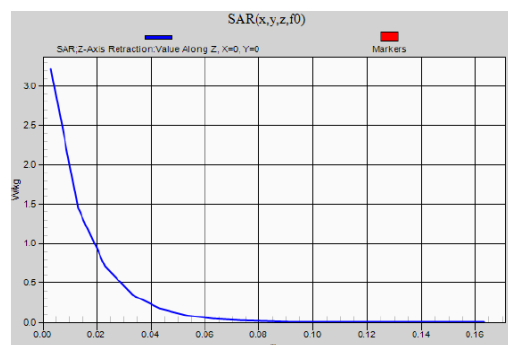
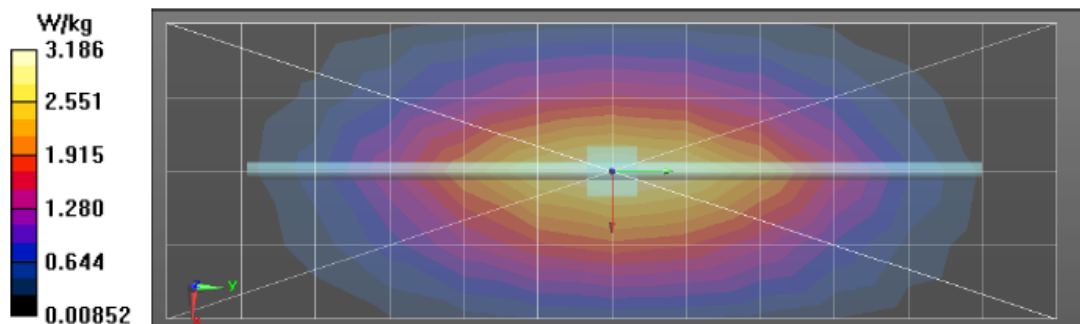
Duty Cycle: 1:1, Medium parameters used: $f = 900$ MHz; $\sigma = 1.08$ S/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³
Probe: ES3DV3 - SN3122, , Frequency: 900 MHz, ConvF(6.22, 6.22, 6.22); Calibrated: 4/18/2018
Electronics: DAE4 Sn850, Calibrated: 3/7/2018

Below 2 GHz-Rev.2/System Performance Check/Dipole Area Scan 2 (41x121x1):

Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 56.04 V/m; Power Drift = 0.02 dB
Fast SAR: SAR(1 g) = 2.67 W/kg; SAR(10 g) = 1.74 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 3.20 W/kg

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

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 56.04 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 4.08 W/kg
SAR(1 g) = 2.65 W/kg; SAR(10 g) = 1.72 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 3.21 W/kg

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

Motorola Solutions, Inc. EME Laboratory
Date/Time: 8/29/2018 11:45:32 PM

Robot#: DASY5-PG-4 | Run#: ZZ-SYSP-900H-180829-05
Dipole Model#: D900V2
Phantom#: ELI4 1016
Tissue Temp: 21.3 (C)
Serial#: 1d026
Test Freq: 900.000 (MHz)
Start Power: 250 (mW)
Rotation (1D): 0.05 dB
Adjusted SAR (1W): 10.04 mW/g (1g)

Comments:

Duty Cycle: 1:1, Medium parameters used: $f = 900$ MHz; $\sigma = 1$ S/m; $\epsilon_r = 40$; $\rho = 1000$ kg/m³
Probe: ES3DV3 - SN3122, , Frequency: 900 MHz, ConvF(6.18, 6.18, 6.18); Calibrated: 4/18/2018
Electronics: DAE4 Sn850, Calibrated: 3/7/2018

Below 2 GHz-Rev.2/System Performance Check/Dipole Area Scan 2 (41x121x1):

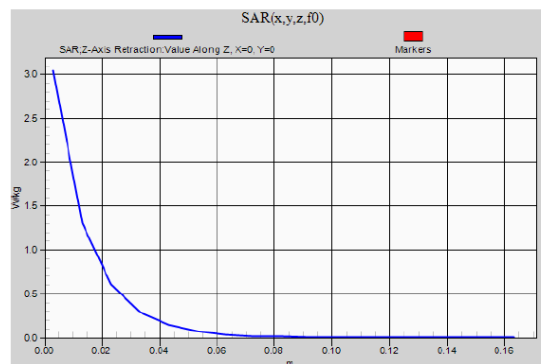
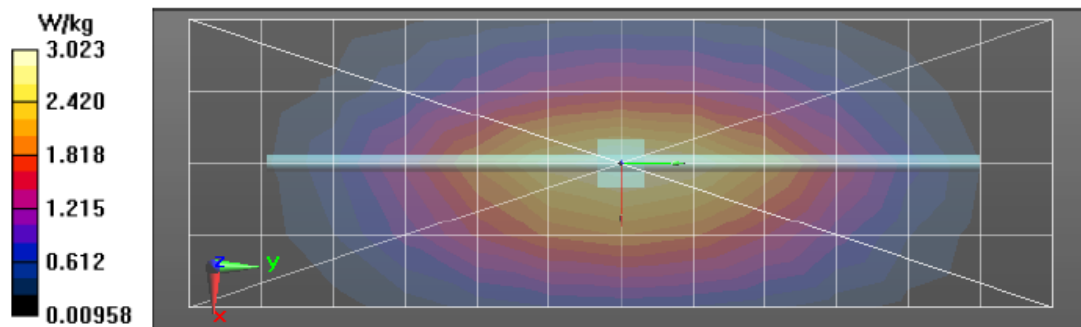
Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm
Reference Value = 57.66 V/m; Power Drift = -0.11 dB
Fast SAR: SAR(1 g) = 2.56 W/kg; SAR(10 g) = 1.69 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 3.07 W/kg

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

Measurement grid: $dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm
Reference Value = 57.66 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 3.94 W/kg
SAR(1 g) = 2.51 W/kg; SAR(10 g) = 1.61 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 3.05 W/kg

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

grid: $dx=20$ mm, $dy=20$ mm, $dz=10$ mm
Maximum value of SAR (measured) = 3.04 W/kg



Motorola Solutions, Inc. EME Laboratory

Date/Time: 9/12/2018 10:31:30 AM

Robot#: DASY5-PG-3 | Run#: FD-SYSP-900B-180912-01
Dipole Model# D900V2
Phantom#: ELI4 1028
Tissue Temp: 22.1 (C)
Serial#: 1d026
Test Freq: 900.0000 (MHz)
Start Power: 250 (mW)
Rotation (1D): 0.043 dB
Adjusted SAR (1W): 11.44 mW/g (1g)

Comments:

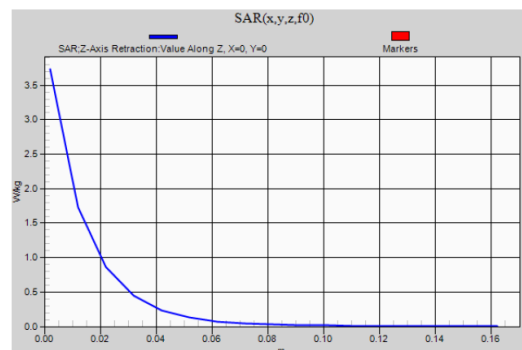
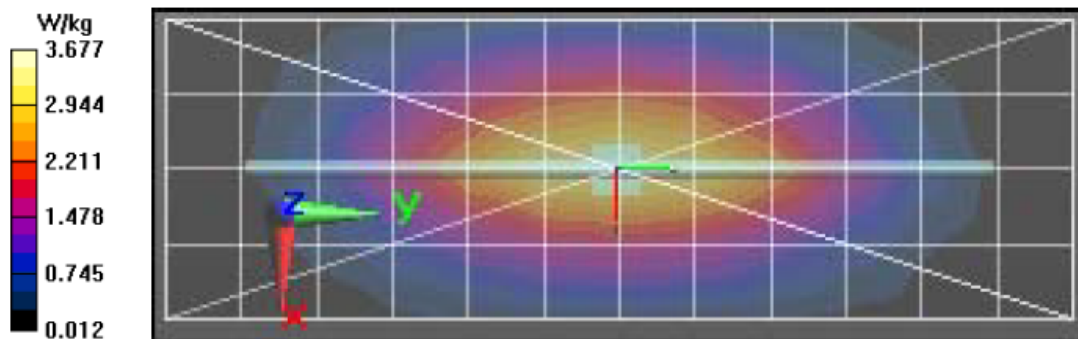
Duty Cycle: 1:1, Medium parameters used: $f = 900 \text{ MHz}$; $\sigma = 1.08 \text{ S/m}$; $\epsilon_r = 52.7$; $\rho = 1000 \text{ kg/m}^3$
Probe: EX3DV4 - SN7486, Frequency: 900 MHz, ConvF(9.94, 9.94, 9.94); Calibrated: 3/20/2018
Electronics: DAE4 Sn1488, Calibrated: 3/9/2018

Below 2 GHz-Rev.2/System Performance Check/Dipole Area Scan 2 (41x121x1):

Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
Reference Value = 59.73 V/m; Power Drift = 0.02 dB
Fast SAR: SAR(1 g) = 2.87 W/kg; SAR(10 g) = 1.87 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 3.70 W/kg

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

Measurement grid: $dx=7.5 \text{ mm}$, $dy=7.5 \text{ mm}$, $dz=5 \text{ mm}$
Reference Value = 59.73 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 4.33 W/kg
SAR(1 g) = 2.86 W/kg; SAR(10 g) = 1.87 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 3.73 W/kg

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

Motorola Solutions, Inc. EME Laboratory

Date/Time: 9/12/2018 6:15:00 PM

Robot#: DASY5-PG-3 | Run#: FD-SYSP-900H-180912-06
Dipole Model#: D900V2
Phantom#: ELI4 1016
Tissue Temp: 22.2 (C)
Serial#: 1d026
Test Freq: 900.0000 (MHz)
Start Power: 250 (mW)
Rotation (1D): 0.059 dB
Adjusted SAR (1W): 10.48 mW/g (1g)

Comments:

Duty Cycle: 1:1, Medium parameters used: $f = 900$ MHz; $\sigma = 1.01$ S/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³
Probe: EX3DV4 - SN7486, Frequency: 900 MHz, ConvF(10.11, 10.11, 10.11); Calibrated: 3/20/2018
Electronics: DAE4 Sn1488, Calibrated: 3/9/2018

Below 2 GHz-Rev.2/System Performance Check/Dipole Area Scan 2 (41x121x1):

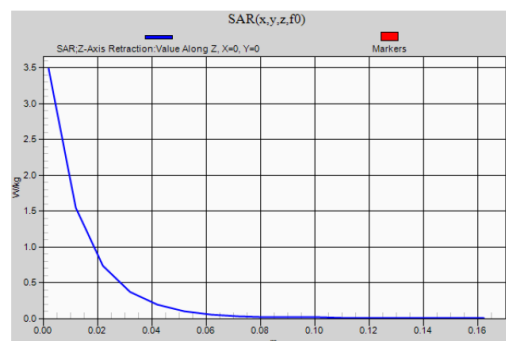
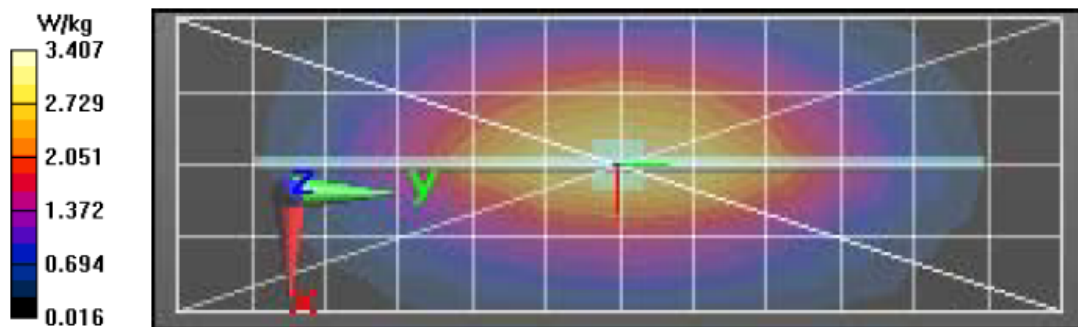
Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm
Reference Value = 60.09 V/m; Power Drift = -0.05 dB
Fast SAR: SAR(1 g) = 2.68 W/kg; SAR(10 g) = 1.76 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 3.47 W/kg

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

Measurement grid: $dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm
Reference Value = 60.09 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 4.08 W/kg
SAR(1 g) = 2.62 W/kg; SAR(10 g) = 1.71 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 3.48 W/kg

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

grid: $dx=20$ mm, $dy=20$ mm, $dz=10$ mm
Maximum value of SAR (measured) = 3.49 W/kg



Motorola Solutions, Inc. EME Laboratory

Date/Time: 9/17/2018 3:26:59 PM

Robot#: DASY5-PG-1 | Run#: LOH-SYSP-900H-180917-05
Dipole Model#: D900V2
Phantom#: ELI4 1050
Tissue Temp: 22.6 (C)
Serial#: 1d026
Test Freq: 900.0000 (MHz)
Start Power: 250 (mW)
Rotation (1D): 0.12dB
Adjusted SAR (1W): 10.72 mW/g (1g)

Comments:

Duty Cycle: 1:1, Medium parameters used: $f = 900$ MHz; $\sigma = 1.01$ S/m; $\epsilon_r = 39.5$; $\rho = 1000$ kg/m³
Probe: EX3DV4 - SN7364, Frequency: 900 MHz, ConvF(10.16, 10.16, 10.16); Calibrated: 1/17/2018
Electronics: DAE4 Sn1483, Calibrated: 1/4/2018

Below 2 GHz-Rev.2/System Performance Check/Dipole Area Scan 2 (41x121x1):

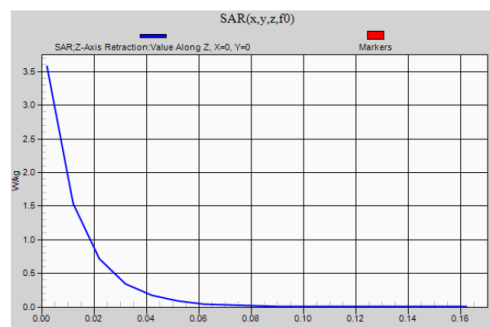
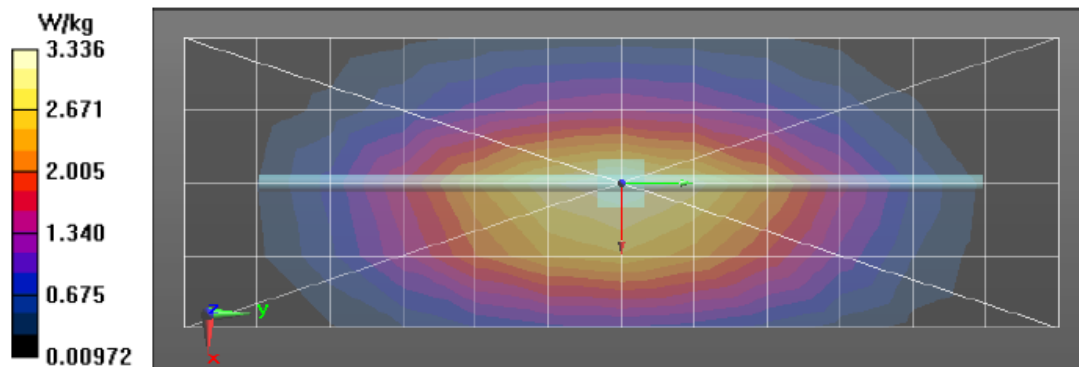
Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm
Reference Value = 60.92 V/m; Power Drift = -0.06 dB
Fast SAR: SAR(1 g) = 2.72 W/kg; SAR(10 g) = 1.8 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 3.54 W/kg

Below 2 GHz-Rev.2/System Performance Check/0-Degree Cube (6x6x7)/Cube 0:

Measurement grid: $dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm
Reference Value = 60.92 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 4.28 W/kg
SAR(1 g) = 2.68 W/kg; SAR(10 g) = 1.73 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 3.60 W/kg

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

grid: $dx=20$ mm, $dy=20$ mm, $dz=10$ mm
Maximum value of SAR (measured) = 3.58 W/kg



Appendix E

DUT Scans

Assessments at the Body - Table 17

Motorola Solutions, Inc. EME Laboratory

Date/Time: 8/28/2018 9:54:19 PM

Robot#: DASY5-PG-4 | Run#: ZZ-AB-180828-02
 Model#: PMUF1955A
 Phantom#: ELI4 1108
 Tissue Temp: 21.3 (C)
 Serial#: 379TUR0009
 Antenna: PMAF4024A
 Test Freq: 915.0000 (MHz)
 Battery: PMNN4578A
 Carry Acc: PMLN7939A
 Audio Acc: HKLN4606A
 Start Power: 0.936 (W)

Comments:

Duty Cycle: 1:1, Medium parameters used: $f = 915$ MHz; $\sigma = 1.1$ S/m; $\epsilon_r = 52.5$; $\rho = 1000$ kg/m³
 Probe: ES3DV3 - SN3122, , Frequency: 915 MHz, ConvF(6.22, 6.22, 6.22); Calibrated: 4/18/2018
 Electronics: DAE4 Sn850, Calibrated: 3/7/2018

Below 2 GHz-Rev.2/Ab Scan/1-Area Scan (61x211x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 23.37 V/m; Power Drift = -0.24 dB

Fast SAR: SAR(1 g) = 0.493 W/kg; SAR(10 g) = 0.343 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 0.560 W/kg

Below 2 GHz-Rev.2/Ab Scan/3-Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 23.37 V/m; Power Drift = -0.30 dB

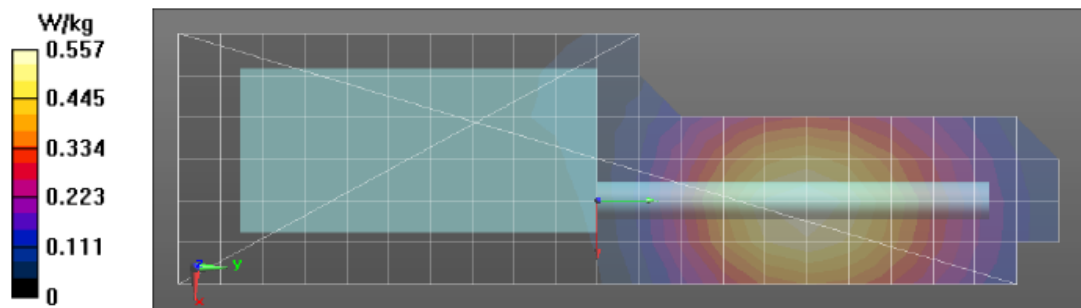
Peak SAR (extrapolated) = 0.635 W/kg

SAR(1 g) = 0.482 W/kg; SAR(10 g) = 0.352 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.539 W/kg

Below 2 GHz-Rev.2/Ab Scan/4-Z-Axis Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Maximum value of SAR (measured) = 0.535 W/kg



Assessment at the Face - Table 18**Motorola Solutions, Inc. EME Laboratory**

Date/Time: 8/30/2018 12:19:43 AM

Robot#: DASY5-PG-4 | Run#: ZZ-FACE-180830-01#
Model#: PMUF1955A
Phantom#: ELI4 1016
Tissue Temp: 21.4 (C)
Serial#: 379TUR0031
Antenna: PMAF4024A
Test Freq: 915.0000 (MHz)
Battery: PMNN4578A
Carry Acc: None, 2.5cm Radio front
Audio Acc: None
Start Power: 1.00 (W)

Comments:

Duty Cycle: 1:1, Medium parameters used: $f = 915$ MHz; $\sigma = 1.01$ S/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³

Probe: ES3DV3 - SN3122, , Frequency: 915 MHz, ConvF(6.18, 6.18, 6.18); Calibrated: 4/18/2018

Electronics: DAE4 Sn850, Calibrated: 3/7/2018

Below 2 GHz-Rev.2/Face Scan/1-Area Scan (61x211x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Reference Value = 39.57 V/m; Power Drift = -0.28 dB

Fast SAR: SAR(1 g) = 1.29 W/kg; SAR(10 g) = 0.888 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 1.46 W/kg

Below 2 GHz-Rev.2/Face Scan/3-Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm

Reference Value = 39.57 V/m; Power Drift = -0.36 dB

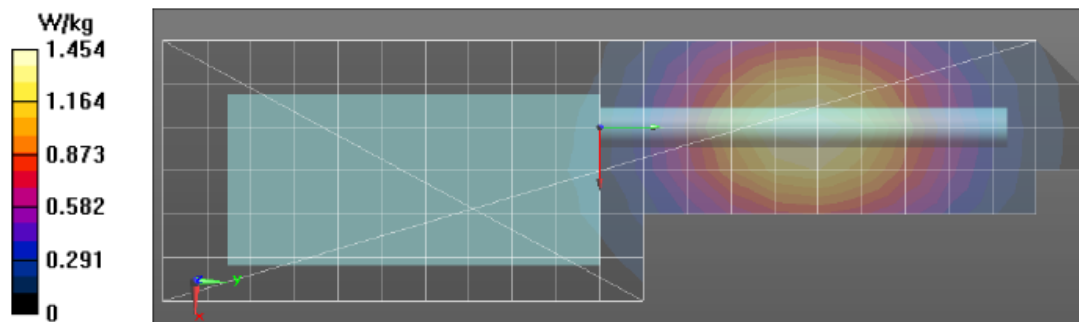
Peak SAR (extrapolated) = 1.72 W/kg

SAR(1 g) = 1.26 W/kg; SAR(10 g) = 0.886 W/kg (SAR corrected for target medium)

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

Below 2 GHz-Rev.2/Face Scan/4-Z-Axis Scan (1x1x17): Measurement grid: $dx=20$ mm, $dy=20$ mm, $dz=10$ mm

Maximum value of SAR (measured) = 1.41 W/kg



Assessment for ISED, Canada (Body) - Table 19

Motorola Solutions, Inc. EME Laboratory

Date/Time: 9/13/2018 9:15:12 AM

Robot#: DASY5-PG-3 | Run#: FD-AB-180913-02#
 Model#: PMUF1955A
 Phantom#: ELI4 1028
 Tissue Temp: 21.5 (C)
 Serial#: 379TUR0009
 Antenna: PMAF4024A
 Test Freq: 902.0000 (MHz)
 Battery: PMNN4578A
 Carry Acc: PMLN7939A
 Audio Acc: HKLN4606A
 Start Power: 0.946 (W)

Comments:

Duty Cycle: 1:1, Medium parameters used: $f = 902$ MHz; $\sigma = 1.08$ S/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³
 Probe: EX3DV4 - SN7486, Frequency: 902 MHz, ConvF(9.94, 9.94, 9.94); Calibrated: 3/20/2018
 Electronics: DAE4 Sn1488, Calibrated: 3/9/2018

Below 2 GHz-Rev.2/Ab Scan/1-Area Scan (61x211x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 25.36 V/m; Power Drift = -0.39 dB

Fast SAR: SAR(1 g) = 0.522 W/kg; SAR(10 g) = 0.366 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 0.634 W/kg

Below 2 GHz-Rev.2/Ab Scan/3-Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 25.36 V/m; Power Drift = -0.46 dB

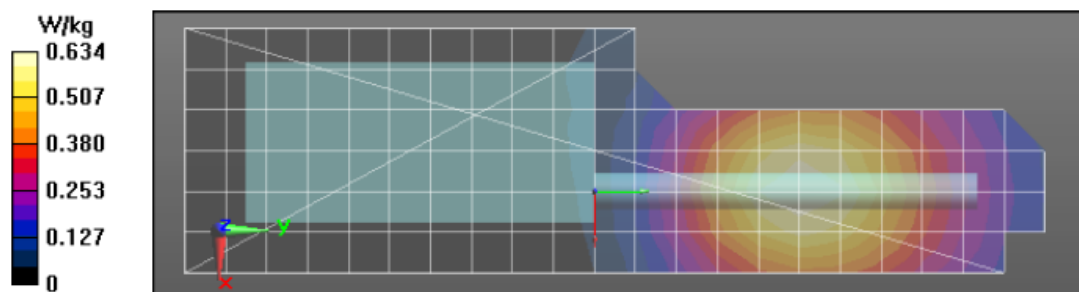
Peak SAR (extrapolated) = 0.678 W/kg

SAR(1 g) = 0.518 W/kg; SAR(10 g) = 0.383 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.611 W/kg

Below 2 GHz-Rev.2/Ab Scan/4-Z-Axis Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Maximum value of SAR (measured) = 0.603 W/kg



Assessment for ISED, Canada (Face) - Table 19

Motorola Solutions, Inc. EME Laboratory

Date/Time: 9/12/2018 7:13:28 PM

Robot#: DASY5-PG-3 | Run#: FD-FACE-180912-07
 Model#: PMUF1955A
 Phantom#: ELI4 1016
 Tissue Temp: 21.7 (C)
 Serial#: 379TUR0031
 Antenna: PMAF4024A
 Test Freq: 902.0000 (MHz)
 Battery: PMNN4578A
 Carry Acc: None, 2.5cm Radio front
 Audio Acc: None
 Start Power: 1.00 (W)

Comments:

Duty Cycle: 1:1, Medium parameters used: $f = 902 \text{ MHz}$; $\sigma = 1.01 \text{ S/m}$; $\epsilon_r = 39.8$; $\rho = 1000 \text{ kg/m}^3$
 Probe: EX3DV4 - SN7486, Frequency: 902 MHz, ConvF(10.11, 10.11, 10.11); Calibrated: 3/20/2018
 Electronics: DAE4 Sn1488, Calibrated: 3/9/2018

Below 2 GHz-Rev.2/Face Scan/1-Area Scan (61x211x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Reference Value = 43.65 V/m; Power Drift = -0.39 dB

Fast SAR: SAR(1 g) = 1.45 W/kg; SAR(10 g) = 0.997 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 1.77 W/kg

Below 2 GHz-Rev.2/Face Scan/3-Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 43.65 V/m; Power Drift = -0.44 dB

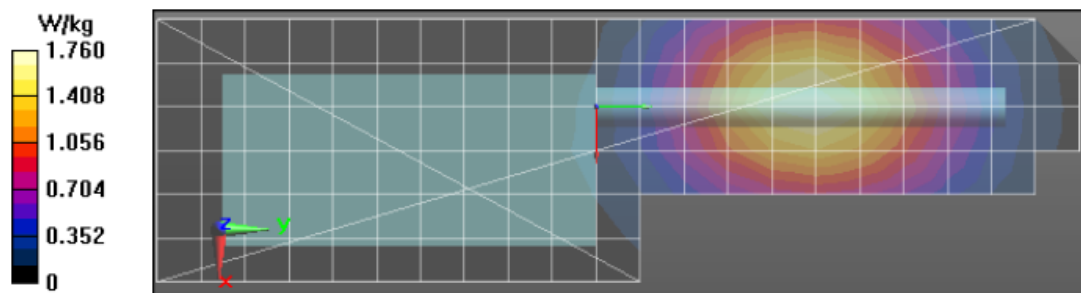
Peak SAR (extrapolated) = 1.92 W/kg

SAR(1 g) = 1.43 W/kg; SAR(10 g) = 1.02 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 1.71 W/kg

Below 2 GHz-Rev.2/Face Scan/4-Z-Axis Scan (1x1x17): Measurement grid: $dx=20\text{mm}$, $dy=20\text{mm}$, $dz=10\text{mm}$

Maximum value of SAR (measured) = 1.70 W/kg



APPENDIX F

Shortened Scan of Highest SAR configuration

Shortened Scan - Table 20

Motorola Solutions, Inc. EME Laboratory
Date/Time: 9/17/2018 4:05:19 PM

Robot#: DASY5-PG-1 | Run#: LOH-FACE-180917-06
 Model#: PMUF1955A
 Phantom#: ELI4 1050
 Tissue Temp: 22.2 (C)
 Serial#: 379TUR0031
 Antenna: PMAF4024A
 Test Freq: 902.0000 (MHz)
 Battery: PMNN4578A
 Carry Acc: None, 2.5cm Radio front
 Audio Acc: None
 Start Power: 1.00 (W)

Comments:

Duty Cycle: 1:1, Medium parameters used: $f = 902$ MHz; $\sigma = 1.01$ S/m; $\epsilon_r = 39.5$; $\rho = 1000$ kg/m³
 Probe: EX3DV4 - SN7364, , Frequency: 902 MHz, ConvF(10.16, 10.16, 10.16); Calibrated: 1/17/2018
 Electronics: DAE4 Sn1483, Calibrated: 1/4/2018

Below 2 GHz-Rev.2/Face Scan/1-Area Scan (61x211x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 40.78 V/m; Power Drift = -0.31 dB
 Fast SAR: SAR(1 g) = 1.46 W/kg; SAR(10 g) = 1.01 W/kg (SAR corrected for target medium)
 Maximum value of SAR (interpolated) = 1.78 W/kg

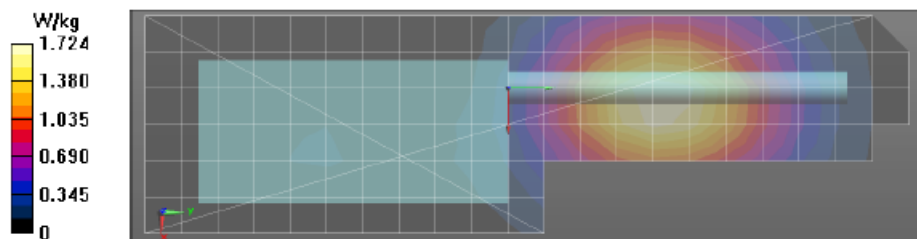
Below 2 GHz-Rev.2/Face Scan/2-Volume 2D Scan (41x41x1): Interpolated grid: dx=0.7500 mm, dy=0.7500 mm, dz=1.000 mm

Reference Value = 40.78 V/m; Power Drift = -0.33 dB
 Fast SAR: SAR(1 g) = 1.44 W/kg; SAR(10 g) = 1.02 W/kg (SAR corrected for target medium)

Below 2 GHz-Rev.2/Face Scan/4-Z-Axis Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Below 2 GHz-Rev.2/Face Scan/3-Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 43.81 V/m; Power Drift = -0.14 dB
 Peak SAR (extrapolated) = 2.06 W/kg
 SAR(1 g) = 1.52 W/kg; SAR(10 g) = 1.07 W/kg (SAR corrected for target medium)
 Maximum value of SAR (measured) = 1.81 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	8	0.78
Full scan (area & zoom)	18	25	0.79

APPENDIX G DUT Test Position Photos

Photos available in Exhibit 7B

APPENDIX H

DUT, Body worn and audio accessories Photos

Photos available in Exhibit 7B