



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:** 07/12/2019

**Report Revision:** A

**Responsible Engineer:** Lee Kin Kting (EME Engineer) **Report Author:** Lee Kin Kting (EME Engineer)

**Date/s Tested:** 07/08/19 - 07/11/19 **Manufacturer:** Motorola Solutions Inc.

**DUT Description:** Handheld Portable – Frequency bands; LMR 136.000 – 174.000 MHz

Test TX mode(s): CW (PTT)

Max. Power output:6.0W (VHF band)Nominal Power:5.0W (VHF band)

**Tx Frequency Bands:** LMR 136.000 – 174.000 MHz

Signaling type: FM

 Model(s) Tested:
 VX-80-D0-5 (AZ089N102)

 Model(s) Certified:
 VX-80-D0-5 (AZ089N102)

Serial Number(s): XX9H010054

Classification: Occupational/Controlled

FCC ID: AZ489FT3846; LMR 150.800 – 173.400 MHz

This report contains results that are immaterial for FCC equipment approval, which

are clearly identified.

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.

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
Tiong Nguk Ing

**Deputy Technical Manager (Approved Signatory)** 

Approval Date: 7/24/2019

# Appendix D System Verification Check Scans

#### FCC ID: AZ489FT3846

# Motorola Solutions, Inc. EME Laboratory

Date/Time: 7/8/2019 12:20:03 PM

Robot#: DASY5-PG-2 | Run#: FD(NZ)-SYSP-150B-190708-09

Dipole Model# CLA-150
Phantom#: ELI4 1016
Tissue Temp: 21.9 (C)
Serial#: 4005

Test Freq: 150.0000 (MHz)
Start Power: 1000 (mW)
Rotation (1D): 0.027 dB
Adjusted SAR (1W): 4.13 mW/g (1g)

#### Comments:

Duty Cycle: 1:1, Medium parameters used: f = 150 MHz;  $\sigma = 0.78 \text{ S/m}$ ;  $\epsilon_r = 59.8$ ;  $\rho = 1000 \text{ kg/m}^3$ 

Probe: EX3DV4 - SN7519, Calibrated: 10/19/2018, Frequency: 150 MHz, ConvF(12.42, 12.42, 12.42) @ 150 MHz

Electronics: DAE4 Sn1294, Calibrated: 10/16/2018

# Below 2 GHz-Rev.2/System Performance Check/Dipole Area Scan 2 (81x81x1):

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

Reference Value = 85.82 V/m; Power Drift = -0.03 dB

Fast SAR: SAR(1 g) = 4.81 W/kg; SAR(10 g) = 3.41 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 5.75 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 = 85.82 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 7.08 W/kg

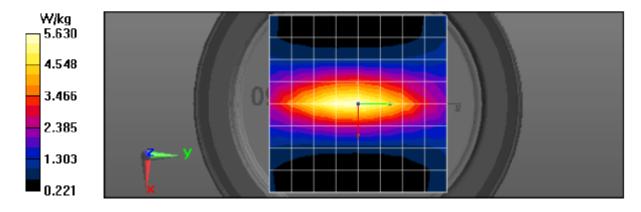
SAR(1 g) = 4.13 W/kg; SAR(10 g) = 2.72 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 5.79 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) = 5.80 W/kg



# Motorola Solutions, Inc. EME Laboratory

Date/Time: 7/9/2019 10:27:46 PM

Robot#: DASY5-PG-2 | Run#: BL-SYSP-150B-190709-10

 Dipole Model#
 CLA-150

 Phantom#:
 ELI4 1016

 Tissue Temp:
 21.6 (C)

 Serial#:
 4005

Test Freq: 150.0000 (MHz)
Start Power: 1000 (mW)
Rotation (1D): 0.027 dB
Adjusted SAR (1W): 4.03 mW/g (1g)

#### Comments:

Duty Cycle: 1:1, Medium parameters used: f = 150 MHz;  $\sigma = 0.78 \text{ S/m}$ ;  $\epsilon_r = 59$ ;  $\rho = 1000 \text{ kg/m}^3$ 

Probe: EX3DV4 - SN7519, Calibrated: 10/19/2018, Frequency: 150 MHz, ConvF(12.42, 12.42, 12.42) @ 150 MHz

Electronics: DAE4 Sn1294, Calibrated: 10/16/2018

# Below 2 GHz-Rev.2/System Performance Check/Dipole Area Scan 2 (81x81x1):

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

Reference Value = 85.05 V/m; Power Drift = -0.04 dB

Fast SAR: SAR(1 g) = 4.75 W/kg; SAR(10 g) = 3.37 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 5.70 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 = 85.05 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 7.07 W/kg

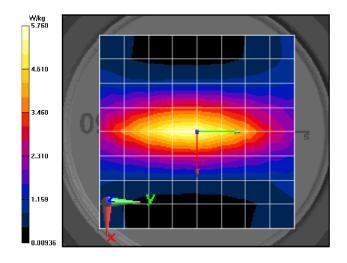
SAR(1 g) = 4.03 W/kg; SAR(10 g) = 2.64 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 5.75 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) = 5.76 W/kg



### Motorola Solutions, Inc. EME Laboratory Date/Time: 7/9/2019 11:24:17 AM

Robot#: DASY5-PG-2 | Run#: FAZ-SYSP-150H-190709-04

 Dipole Model#
 CLA-150

 Phantom#:
 ELI4 1022

 Tissue Temp:
 20.9 (C)

 Serial#:
 4005

Test Freq: 150.0000 (MHz)
Start Power: 1000 (mW)
Rotation (1D): 0.019 dB
Adjusted SAR (1W): 3.88 mW/g (1g)

#### Comments:

Duty Cycle: 1:1, Medium parameters used: f = 150 MHz;  $\sigma = 0.74 \text{ S/m}$ ;  $\epsilon_r = 51.4$ ;  $\rho = 1000 \text{ kg/m}^3$ Probe: EX3DV4 - SN7519, Calibrated: 10/19/2018, Frequency: 150 MHz, ConvF(13.03, 13.03, 13.03) @ 150 MHz

Electronics: DAE4 Sn1294, Calibrated: 10/16/2018

# Below 2 GHz-Rev.2/System Performance Check/Dipole Area Scan 2 (81x81x1):

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

Reference Value = 85.60 V/m; Power Drift = -0.05 dB

Fast SAR: SAR(1 g) = 4.58 W/kg; SAR(10 g) = 3.25 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 5.48 W/kg

# Below 2 GHz-Rev.2/System Performance Check/0-Degree Cube (5x6x7)/Cube 0:

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 85.60 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 6.65 W/kg

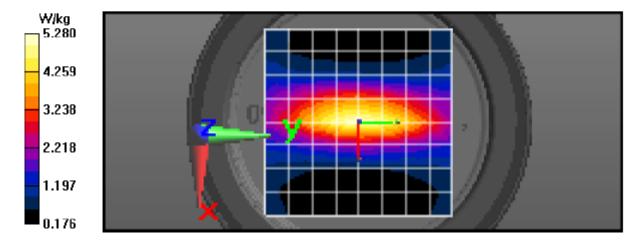
SAR(1 g) = 3.88 W/kg; SAR(10 g) = 2.52 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 5.44 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) = 5.45 W/kg



#### FCC ID: AZ489FT3846

# Motorola Solutions, Inc. EME Laboratory Date/Time: 7/11/2019 4:01:37 PM

Robot#: DASY5-PG-2 | Run#: FD(NZ)-SYSP-150H-190711-04

 Dipole Model#
 CLA-150

 Phantom#:
 ELI4 1109

 Tissue Temp:
 20.3 (C)

 Serial#:
 4005

Test Freq: 150.0000 (MHz)
Start Power: 1000 (mW)
Rotation (1D): 0.028 dB
Adjusted SAR (1W): 3.93 mW/g (1g)

#### Comments:

Duty Cycle: 1:1, Medium parameters used: f = 150 MHz;  $\sigma = 0.77 \text{ S/m}$ ;  $\epsilon_r = 49.9$ ;  $\rho = 1000 \text{ kg/m}^3$ 

Probe: EX3DV4 - SN7519, Calibrated: 10/19/2018, Frequency: 150 MHz, ConvF(13.03, 13.03, 13.03) @ 150 MHz

Electronics: DAE4 Sn1294, Calibrated: 10/16/2018

# Below 2 GHz-Rev.2/System Performance Check/Dipole Area Scan 2 (81x81x1):

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

Reference Value = 85.90 V/m; Power Drift = -0.07 dB

Fast SAR: SAR(1 g) = 4.64 W/kg; SAR(10 g) = 3.3 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 5.74 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 = 85.90 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 7.10 W/kg

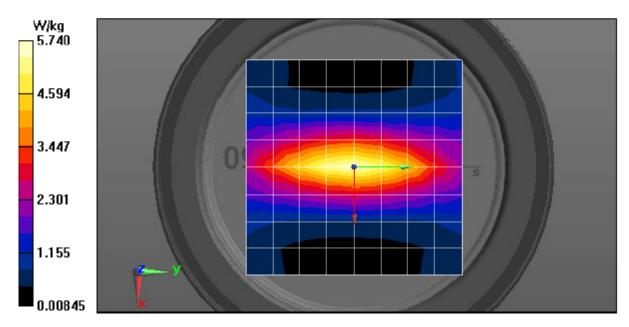
SAR(1 g) = 3.93 W/kg; SAR(10 g) = 2.56 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 5.74 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) = 5.74 W/kg



# Appendix E DUT Scans

# Assessments at the Body with Body Worn CZ072CL61 - Table 17

# Motorola Solutions, Inc. EME Laboratory

Date/Time: 7/9/2019 12:57:16 AM

Robot#: DASY5-PG-2 | Run#: BL-AB-190709-02#

Model#: AZ089N102 ELI4 1016 Phantom#: Tissue Temp: 21.8 (C) XX9H010054 Serial#: CZ089AN006 Antenna: Test Freq: 173.4000 (MHz) CZ089B002 Battery: CZ072CL61 CZ084AUA01 Carry Acc: Audio Acc: 6.00 (W) Start Power:

#### Comments:

Duty Cycle: 1:1, Medium parameters used: f = 173 MHz;  $\sigma = 0.79$  S/m;  $\epsilon_r = 59.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Probe: EX3DV4 - SN7519, Calibrated: 10/19/2018, Frequency: 173.4 MHz, ConvF(12.42, 12.42, 12.42) @ 173.4 MHz

Electronics: DAE4 Sn1294, Calibrated: 10/16/2018

# Below 2 GHz-Rev.2/Ab Scan/1-Area Scan (71x211x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 25.44 V/m; Power Drift = -0.41 dB

Fast SAR: SAR(1 g) = 0.459 W/kg; SAR(10 g) = 0.336 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 0.536 W/kg

# Below 2 GHz-Rev.2/Ab Scan/3-Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm,

dy=7.5mm, dz=5mm

Reference Value = 25.44 V/m; Power Drift = -0.47 dB

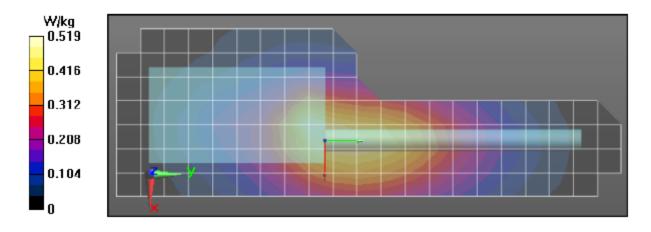
Peak SAR (extrapolated) = 0.664 W/kg

SAR(1 g) = 0.413 W/kg; SAR(10 g) = 0.298 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.500 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) = 0.509 W/kg



# Assessments at the Face - Table 19

# Motorola Solutions, Inc. EME Laboratory Date/Time: 7/9/2019 2:23:06 PM

Robot#: DASY5-PG-2 | Run#: FAZ-FACE-190709-06

AZ089N102 Model#: Phantom#: ELI4 1022 Tissue Temp: 20.8 (C) XX9H010054 Serial#: CZ089AN06 Antenna: Test Freq: 173.4000(MHz) Battery: CZ089B002 Carry Acc: @ front Audio Acc: N/A Start Power: 6.00 (W)

#### Comments:

Duty Cycle: 1:1, Medium parameters used: f = 173 MHz;  $\sigma = 0.76$  S/m;  $\epsilon_r = 50.5$ ;  $\rho = 1000$  kg/m<sup>3</sup> Probe: EX3DV4 - SN7519, Calibrated: 10/19/2018, Frequency: 173.4 MHz, ConvF(13.03, 13.03, 13.03) @ 173.4 MHz Electronics: DAE4 Sn1294, Calibrated: 10/16/2018

# Below 2 GHz-Rev.2/Face Scan/1-Area Scan (71x211x1): Interpolated grid: dx=1.500 mm, dy=1.500

 $_{\rm mn}$ 

Reference Value = 45.38 V/m: Power Drift = -0.23 dB

Fast SAR: SAR(1 g) = 1.4 W/kg; SAR(10 g) = 1.07 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 1.61 W/kg

# 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 = 45.38 V/m; Power Drift = -0.28 dB

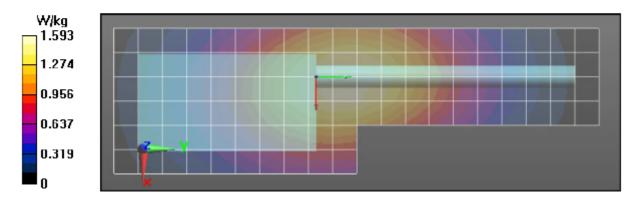
Peak SAR (extrapolated) = 1.82 W/kg

SAR(1 g) = 1.34 W/kg; SAR(10 g) = 1.03 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 1.58 W/kg

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

Maximum value of SAR (measured) = 1.57 W/kg



# Assessments at the Body for Outside FCC PT90 – Table 20

# Motorola Solutions, Inc. EME Laboratory Date/Time: 7/9/2019 11:13:29 PM

Robot#: DASY5-PG-2 | Run#: BL-AB-190709-11 Model#: AZ089N102 Phantom#: ELI4 1016 Tissue Temp: 21.4 (C) XX9H010054 Serial#: CZ089AN005 138.0000 (MHz) CZ089B002 CZ072CL61 Antenna: Test Freq: Battery: Carry Acc: Audio Acc: CZ084AUA01 Start Power: 5.96 (W)

#### Comments:

Duty Cycle: 1:1, Medium parameters used: f = 138 MHz;  $\sigma = 0.77 \text{ S/m}$ ;  $\epsilon_r = 59.3$ ;  $\rho = 1000 \text{ kg/m}^3$ 

Probe: EX3DV4 - SN7519, Calibrated: 10/19/2018, Frequency: 138 MHz, ConvF(12.42, 12.42, 12.42) @ 138 MHz

Electronics: DAE4 Sn1294, Calibrated: 10/16/2018

# Below 2 GHz-Rev.2/Ab Scan/1-Area Scan (71x211x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 48.70 V/m; Power Drift = -0.73 dB

Fast SAR: SAR(1 g) = 1.98 W/kg; SAR(10 g) = 1.46 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 2.31 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 = 48.70 V/m; Power Drift = -0.66 dB

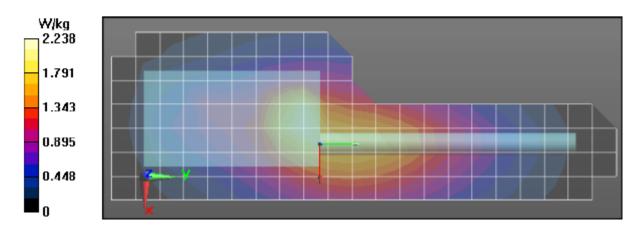
Peak SAR (extrapolated) = 3.80 W/kg

SAR(1 g) = 1.89 W/kg; SAR(10 g) = 1.19 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 2.68 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) = 2.73 W/kg



#### FCC ID: AZ489FT3846

### Assessments at the Face for Outside FCC PT90 – Table 20

### Motorola Solutions, Inc. EME Laboratory Date/Time: 7/9/2019 6:31:15 PM

Robot#: DASY5-PG-2 | Run#: BL-FACE-190709-08

Model#: AZ089N102 Phantom#: ELI4 1022 Tissue Temp: 20.5 (C) Serial#: XX9H010054 Antenna: CZ089AN005 Test Freq: 144.0000 (MHz) CZ089B002 Battery: @ front Carry Acc: Audio Acc: N/A 5.98 (W) Start Power:

#### Comments:

Duty Cycle: 1:1, Medium parameters used: f = 144 MHz;  $\sigma = 0.74 \text{ S/m}$ ;  $\epsilon_r = 51.6$ ;  $\rho = 1000 \text{ kg/m}^3$ 

Probe: EX3DV4 - SN7519, Calibrated: 10/19/2018, Frequency: 144 MHz, ConvF(13.03, 13.03, 13.03) @ 144 MHz

Electronics: DAE4 Sn1294, Calibrated: 10/16/2018

# Below 2 GHz-Rev.2/Face Scan/1-Area Scan (71x211x1): Interpolated grid: dx=1.500 mm, dy=1.500

 $_{\rm mm}$ 

Reference Value = 34.58 V/m; Power Drift = 0.03 dB

Fast SAR: SAR(1 g) = 0.857 W/kg; SAR(10 g) = 0.662 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 0.971 W/kg

# 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 = 34.58 V/m; Power Drift = 0.06 dB

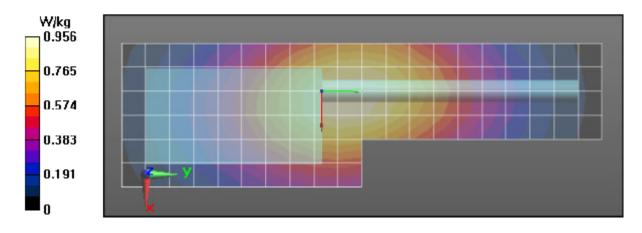
Peak SAR (extrapolated) = 1.12 W/kg

SAR(1 g) = 0.827 W/kg; SAR(10 g) = 0.638 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.961 W/kg

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

Maximum value of SAR (measured) = 0.968 W/kg



# **APPENDIX F Shortened Scan of Highest SAR configuration**

# **Shortened Scan - Table 21**

#### Motorola Solutions, Inc. EME Laboratory Date/Time: 7/11/2019 6:37:20 PM

Robot#: DASY5-PG-2 | Run#: BL-FACE-190711-05

Model#: AZ089N102 Phantom#: ELI4 1109 20.3 (C) Tissue Temp: Serial#: XX9H010054 CZ089AN006 Antenna: 173.4000 (MHz) Test Freq: Battery: CZ089B002 @ front Carry Acc: Audio Acc: N/A 6.00 (W) Start Power:

#### Comments:

Duty Cycle: 1:1, Medium parameters used: f = 173 MHz;  $\sigma = 0.78 \text{ S/m}$ ;  $\epsilon_r = 48.9$ ;  $\rho = 1000 \text{ kg/m}^3$ 

Probe: EX3DV4 - SN7519, Calibrated: 10/19/2018, Frequency: 173.4 MHz, ConvF(13.03, 13.03, 13.03) @ 173.4 MHz

Electronics: DAE4 Sn1294, Calibrated: 10/16/2018

# Below 2 GHz-Rev.2/Face Scan/1-Area Scan (71x211x1): Interpolated grid: dx=1.500 mm, dy=1.500

mm

Reference Value = 44.55 V/m; Power Drift = -1.41 dB

Fast SAR: SAR(1 g) = 1.22 W/kg; SAR(10 g) = 0.933 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 1.41 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 = 44.55 V/m; Power Drift = -1.39 dB

Fast SAR: SAR(1 g) = 1.05 W/kg; SAR(10 g) = 0.796 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 1.22 W/kg

#### Below 2 GHz-Rev.2/Face Scan/3-Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm,

dy=7.5mm, dz=5mm

Reference Value = 48.39 V/m; Power Drift = -0.57 dB

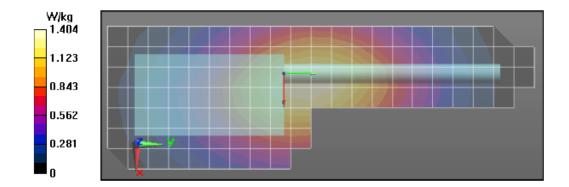
Peak SAR (extrapolated) = 2.05 W/kg

SAR(1 g) = 1.49 W/kg; SAR(10 g) = 1.14 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 1.76 W/kg

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

Maximum value of SAR (measured) = 1.22 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)	21	8	0.85
Full scan (area & zoom)	19	20	0.71

# **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