MOTOROLA

ACCREDITED
TESTING CERT # 2518.01

FCC ID: ABZ99FT4056
DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 2 of 2

Government & Public Safety
EME Test Laboratory
8000 West Sunrise Blvd
Fort Lauderdale, FL. 33322

Date of Report: 3/11/08
Report Revision: C
Report ID: PC ll rpt_PR400 UHF2 Plain_Battery Rev C_080311_ SR5977

Responsible Engineer: Veerapan Veeramani / PeiLoo Tey (EME Engineer)
Date`s Tested: 2/14/08; 2/22/08
Manufacturer/Location: Motorola – Penang
Sector/Group/Div.: GTDG
Date submitted for test: 12/21/07
DUT Description: PR400 Piranha 438-470MHz 1-4W 16 Channels, w/no display, no keypad.
Test TX mode(s): CW
Max. Power output: 4.6 Watts
Nominal Power: 4.0 Watts
Tx Frequency Bands: 438 – 470 MHz
Signaling type: FM
Model(s) Tested: PMUE 1966A / AAH65RDC9AA2AN
Model(s) Certified: PMUE 1966A / AAH65RDC9AA2AN
Serial Number(s): 018TDQ1005
Classification: Occupational/Controlled
Rule Part(s): 90

Approved Accessories:
Antenna(s):
NAE6522A (438-470MHz Heliflex ¼ wave; -2.0dBi)
Battery(ies):
NNTN4497C (Li Ion High Capacity battery)
Body worn accessory(ies):
HLN6602A (Universal Chest Pack)
Audio accessory(ies):
HMN9030A (Remote Speaker Microphone)

Max. Calc. : 1-g Avg. SAR: 5.53 W/kg (Body); 10-g Avg. SAR: 3.98 W/kg (Body)
Max. Calc. : 1-g Avg. SAR: 5.12 W/kg (Face); 10-g Avg. SAR: 3.78 W/kg (Face)

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 2.0 of this report. This report shall not be reproduced without written approval from an officially designated representative of the Motorola 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.

Signature on file – Deanna Zakharia
Deanna Zakharia G&PS EME Lab Senior Resource Manager, Laboratory Director,

Approval Date: 3/11/08

Certification Date: 3/7/08

Certification No.: 080302AD

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

Accreditation No.: SCS 108

Client Motorola CGISS

Certificate No: D450V2-1001_May06

CALIBRATION CERTIFICATE

Object	D450V2 - SN: 1001
Calibration procedure(s)	QA CAL-15.v4 Calibration Procedure for dipole validation kits below 800 MHz
Calibration date:	May 25, 2006
Condition of the calibrated item	In Tolerance

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 (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41495277	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41498087	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Reference 3 dB Attenuator	SN: S5054 (3c)	11-Aug-05 (METAS, No. 251-00499)	Aug-06
Reference 20 dB Attenuator	SN: S5086 (20b)	4-Apr-06 (METAS, No. 251-00558)	Apr-07
Reference Probe ET3DV6	SN 1507	11-Jul-05 (SPEAG, No. ET3-1507_Jul05)	Jul-06
DAE4	SN 601	15-Dec-05 (SPEAG, No. DAE4-601_Dec05)	Dec-06

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-05)	In house check: Nov 06

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Fin Bomholt	R&D Director	

Issued: May 25, 2006

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
Swiss Calibration Service

Accredited by the Swiss Federal Office of Metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConF	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 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4 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.

Measurement Conditions

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

DASY Version	DASY4	V4.6
Extrapolation	Advanced Extrapolation	
Phantom	Flat Phantom V4.4	Shell thickness: 6 ± 0.2 mm
Distance Dipole Center - TSL	15 mm	with Spacer
Area Scan resolution	dx, dy = 15 mm	
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	43.6 ± 6 %	0.86 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	condition	
SAR measured	398 mW input power	2.00 mW / g
SAR normalized	normalized to 1W	5.03 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**5.06 mW / g ± 18.1 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	398 mW input power	1.35 mW / g
SAR normalized	normalized to 1W	3.39 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**3.40 mW / g ± 17.6 % (k=2)**

[1] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.0 Ω - 9.6 jΩ
Return Loss	- 20.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.343 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.
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	March 22, 2002

DASY4 Validation Report for Head TSL

Date/Time: 25.05.2006 13:20:31

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 450 MHz; Type: D450V2; Serial: D450V2 - SN:1001

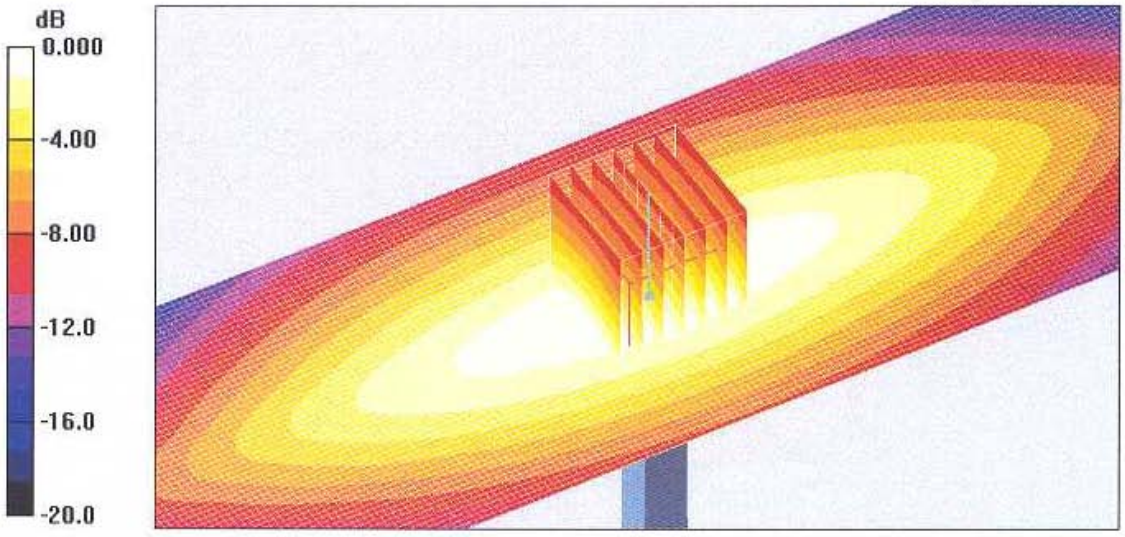
Communication System: CW; Frequency: 450 MHz; Duty Cycle: 1:1
Medium: HSL450;
Medium parameters used: f = 450 MHz; σ = 0.86 mho/m; ε_r = 43.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (LF); ConvF (6.59, 6.59, 6.59); Calibrated: 11.07.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 4.4; Type: Flat Phantom 4.4
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

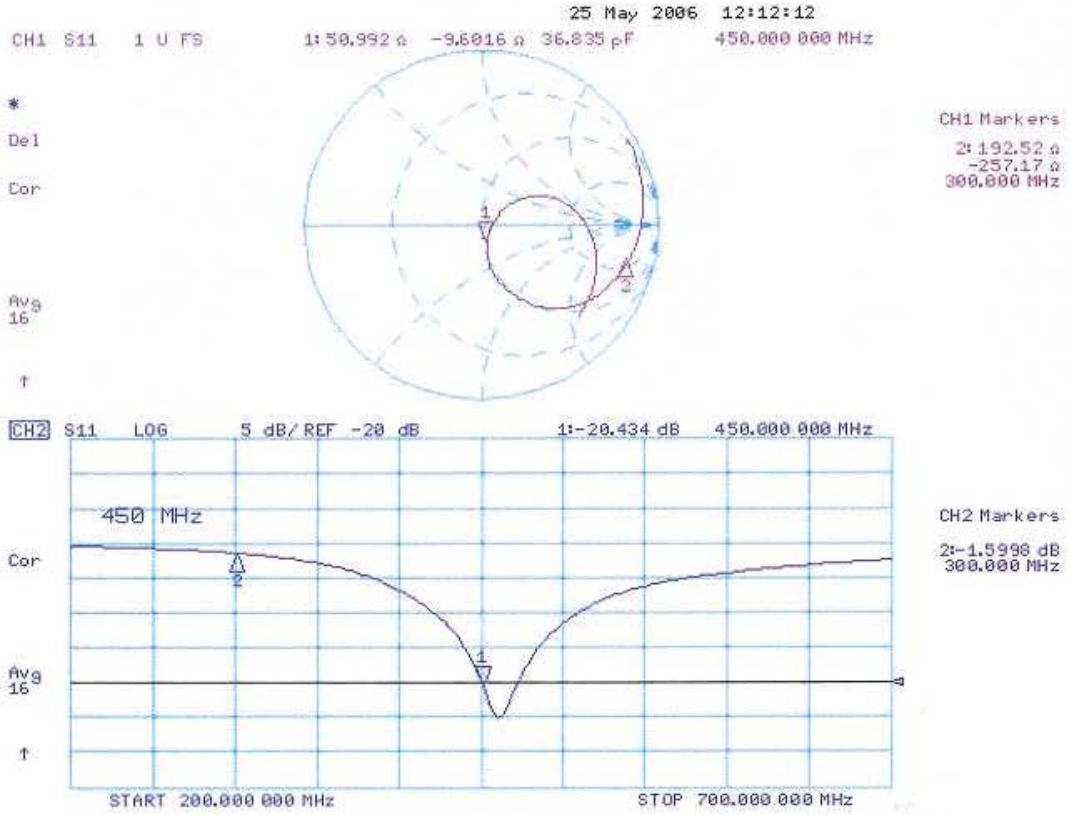
d=15mm, Pin=398mW/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.14 mW/g

d=15mm, Pin=398mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.1 V/m; Power Drift = -0.014 dB
Peak SAR (extrapolated) = 2.85 W/kg
SAR(1 g) = 2 mW/g; SAR(10 g) = 1.35 mW/g
Maximum value of SAR (measured) = 2.14 mW/g



0 dB = 2.14mW/g

Impedance Measurement Plot for Head TSL



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

Accreditation No.: **SCS 108**

Client **Motorola CGISS**

Certificate No: **D450V2-1002_Aug06**

CALIBRATION CERTIFICATE

Object	D450V2 - SN: 1002
Calibration procedure(s)	QA CAL-15.v4 Calibration Procedure for dipole validation kits below 800 MHz
Calibration date:	August 24, 2006
Condition of the calibrated item	In Tolerance

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 (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41495277	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41498087	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Reference 3 dB Attenuator	SN: S5054 (3c)	10-Aug-06 (METAS, No. 217-00592)	Aug-07
Reference 20 dB Attenuator	SN: S5086 (20b)	4-Apr-06 (METAS, No. 251-00558)	Apr-07
Reference Probe ET3DV6	SN 1507	28-Oct-05 (SPEAG, No. ET3-1507_Oct05)	Oct-06
DAE4	SN 601	15-Dec-05 (SPEAG, No. DAE4-601_Dec05)	Dec-06

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-05)	In house check: Nov 06

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

Issued: August 28, 2006

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

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConF	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 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4 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.

Measurement Conditions

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

DASY Version	DASY4	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Flat Phantom V4.4	Shell thickness: 6 ± 0.2 mm
Distance Dipole Center - TSL	15 mm	with Spacer
Area Scan resolution	dx, dy = 15 mm	
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	43.6 ± 6 %	0.86 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	condition	
SAR measured	398 mW input power	2.10 mW / g
SAR normalized	normalized to 1W	5.28 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**5.31 mW / g ± 18.1 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	398 mW input power	1.41 mW / g
SAR normalized	normalized to 1W	3.54 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**3.55 mW / g ± 17.6 % (k=2)**

[1] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	55.5 Ω - 5.1 jΩ
Return Loss	- 23.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.354 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.
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	March 22, 2002

DASY4 Validation Report for Head TSL

Date/Time: 24.08.2006 12:40:3

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 450 MHz; Type: D450V2; Serial: D450V2 - SN:1002

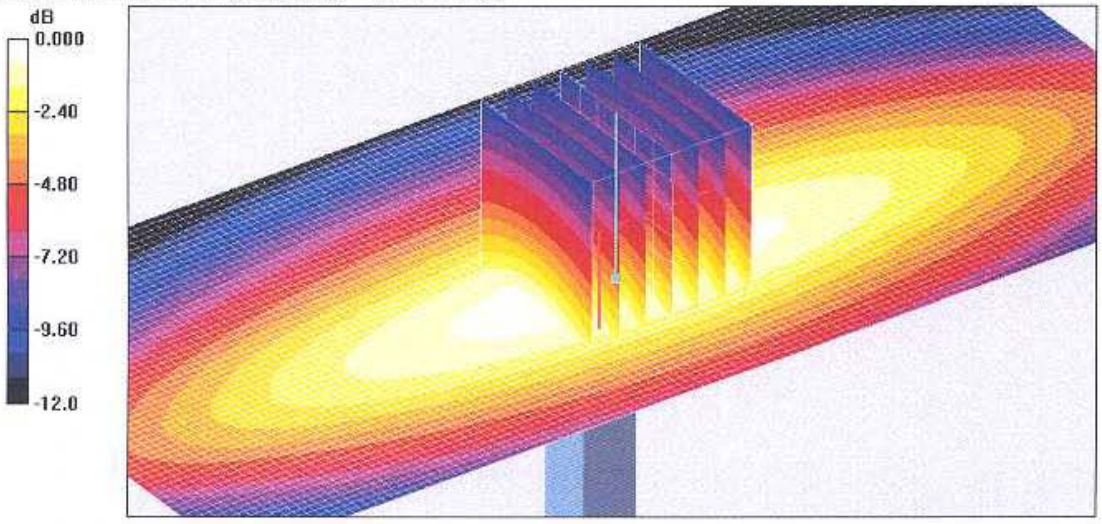
Communication System: CW; Frequency: 450 MHz;Duty Cycle: 1:1
Medium: HSL450;
Medium parameters used: f = 450 MHz; σ = 0.86 mho/m; ε_r = 43.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (LF); ConvF(6.46, 6.46, 6.46); Calibrated: 10.07.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 4.4; Type: Flat Phantom 4.4; ;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

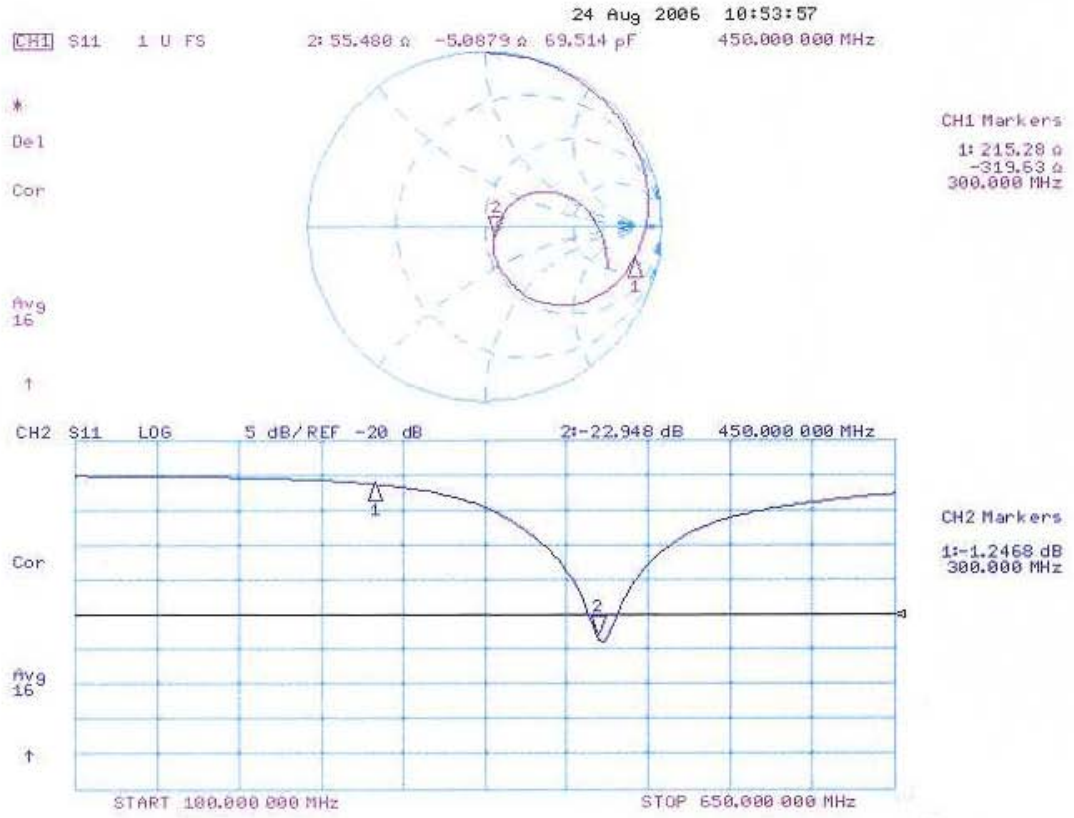
d=15mm, Pin=398mW 2/Area Scan (61x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.21 mW/g

d=15mm, Pin=398mW 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.2 V/m; Power Drift = -0.018 dB
Peak SAR (extrapolated) = 3.09 W/kg
SAR(1 g) = 2.1 mW/g; SAR(10 g) = 1.41 mW/g
Maximum value of SAR (measured) = 2.26 mW/g



0 dB = 2.26mW/g

Impedance Measurement Plot for Head TSL



APPENDIX D
Test System Verification Scans

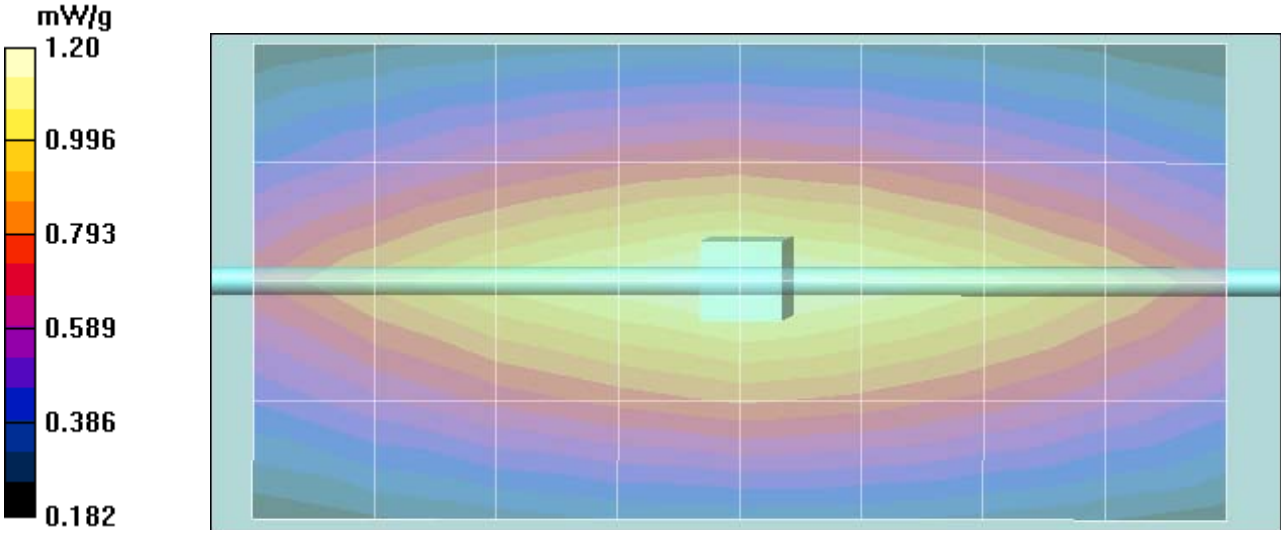
Dipole validation scans at the head from SPEAG are provided in APPENDIX C. G&PS' EME lab validates its' dipole(s) to the applicable IEEE system performance targets. A system validation was performed using FCC body tissue parameters to generate the system performance target values for body at the applicable frequency. Dipoles are assessed using multiple probes and measurements were performed using the isotropic assessment procedure mentioned below.
To assess the isotropic characteristics of the measurement probe, two system performance zoom scans (0 and 90 degrees) were measured. The measured results were averaged together in order to obtain the final calculated 1 gram results.
The results obtained from each probe were then averaged together to determine the new measured SAR target.

Motorola Government & Public Safety EME Laboratory
Date/Time: 2/14/2008 10:30:44 AM

Robot# / Run#: DASY4-FL-1 / JsT-SYSP-450B-080214-01
Phantom# / Tissue Temp.: 80302002B-S8 / 20.2 (C)
Dipole Model# / Serial#: D450V2 / 1001
TX Freq. / Start power: 450 (MHz) / 250 (mW)

Target: 4.44 mW/g (1g)
Calculated: 4.46 mW/g (1g)
Percent from Target (+/-): 0.5 % (1g)

Probe: ET3DV6R - SN1545, Calibrated: 8/28/2007, ConvF(7.14, 7.14, 7.14)
Electronics: DAE3 Sn363, Calibrated: 4/24/2007
Duty Cycle: 1:1, Medium parameters used: f = 450 MHz; σ = 0.93 mho/m; ε_r = 56.4; ρ = 1000 kg/m^3
System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 36.6 V/m; Power Drift = 0.00709 dB
Peak SAR (extrapolated) = 1.79 W/kg
SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.738 mW/g
Maximum value of SAR (measured) = 1.20 mW/g
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 36.6 V/m; Power Drift = 0.00709 dB
Peak SAR (extrapolated) = 1.77 W/kg
SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.732 mW/g
Maximum value of SAR (measured) = 1.18 mW/g
System Performance Check/Dipole Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm
System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm,
dz=10mm

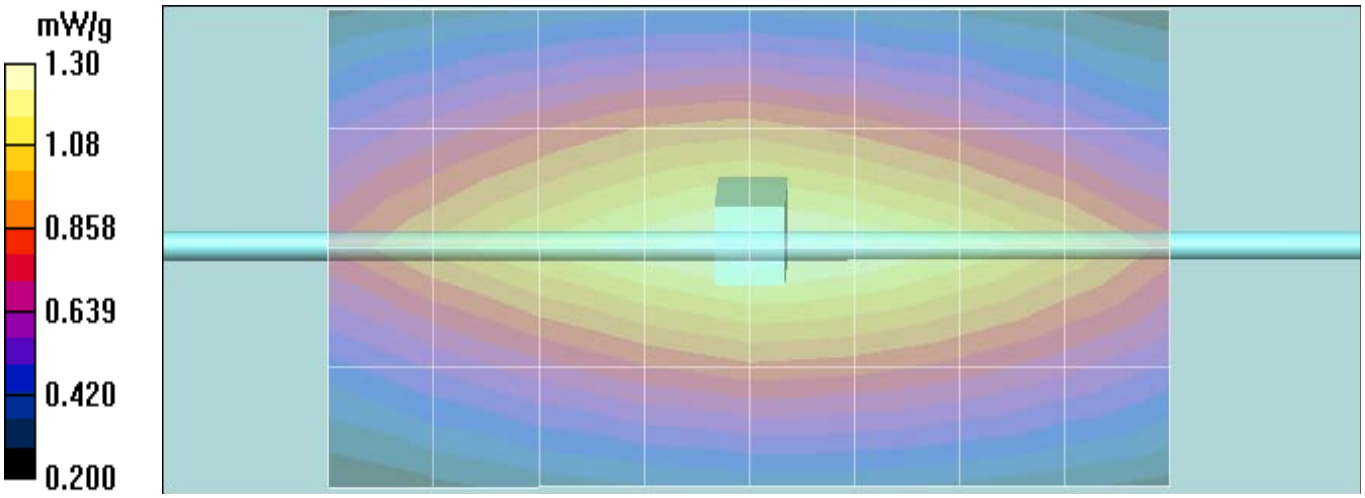


Motorola Government & Public Safety EME Laboratory
Date/Time: 2/22/2008 12:54:26 PM

Robot# / Run#: DASY4-FL-1 / JsT-SYSP-450H-080222-01
Phantom# / Tissue Temp.: 80302002A-S7 / 20.0 (C)
Dipole Model# / Serial#: D450V2 / 1002
TX Freq. / Start power: 450 (MHz) / 250 (mW)

Target: 4.78 mW/g (1g)
Calculated: 4.86 mW/g (1g)
Percent from Target (+/-): 1.7 % (1g)

Probe: ET3DV6R - SN1545, Calibrated: 8/28/2007, ConvF(6.66, 6.66, 6.66)
Electronics: DAE3 Sn363, Calibrated: 4/24/2007
Duty Cycle: 1:1, Medium parameters used: f = 450 MHz; σ = 0.83 mho/m; ε_r = 44; ρ = 1000 kg/m^3
System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 40.7 V/m; Power Drift = 0.0284 dB
Peak SAR (extrapolated) = 1.92 W/kg
SAR(1 g) = 1.22 mW/g; SAR(10 g) = 0.808 mW/g
Maximum value of SAR (measured) = 1.30 mW/g
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 40.7 V/m; Power Drift = 0.0284 dB
Peak SAR (extrapolated) = 1.90 W/kg
SAR(1 g) = 1.21 mW/g; SAR(10 g) = 0.805 mW/g
Maximum value of SAR (measured) = 1.29 mW/g
System Performance Check/Dipole Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm
System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm,
dz=10mm Maximum value of SAR (measured) = 1.31 mW/g



DIPOLE SAR TARGET - HEAD

Date:	03/13/07	Frequency (MHz):	450
Lab Location:	NE	Mixture Type:	IEEE Head
DAE Serial #:	363	Ambient Temp.(°C):	20.9

Tissue Characteristics

Permitivity:	43.7	Phantom Type/SN:	80302002A-S7
Conductivity:	0.85	Distance (mm):	15
Tissue Temp.(°C):	20.5		

Reference Source:	Dipole	Power to Dipole:	250 mW
Reference SN:	1001		

Target SAR Value: 4.9 mW/g (1g avg.), 3.3 mW/g (10g avg.)
(normalized to 1.0 W)

New Target:

Average Measured SAR Value: 4.77 mW/g (1g avg.), 3.15 mW/g (10g avg.)

Percent Difference From Target (MUST be within k=2 Uncertainty): -2.70% (1g ave)
-4.70% (10g ave)

Test performed by: J. Turco Initial:

Probe SN #s	1-G Cube	Diff from Ave	10-G Cube	Diff from Ave	Robot
1383	4.79	0.47%	3.14	-0.16%	R1
1545	4.76	-0.16%	3.15	0.16%	R1
1547	4.75	-0.37%	3.14	-0.16%	R1
1384	4.77	0.05%	3.15	0.16%	R1
5	NA	#VALUE!	NA	#VALUE!	NA
Average	4.7675		3.1450	New Measured SAR Value	
(normalized to 1.0 W, including drift)					

Motorola Internal Use Only FCD-0733 Rev. 3

DIPOLE SAR TARGET - BODY

Date:	**03/13/07**	Frequency (MHz):	**450**
Lab Location:	NE	Mixture Type:	**FCC Body**
DAE Serial #:	363	Ambient Temp.(°C):	20.7

Tissue Characteristics

Permitivity:	57.2	Phantom Type/SN:	80302002D-S15
Conductivity:	0.96	Distance (mm):	15
Tissue Temp.(°C):	20.5		

Reference Source:	Dipole	Power to Dipole:	250 mW
Reference SN:	**1001**		

New Target:

Average Measured SAR Value: **4.44** mW/g(1g avg.), **2.93** mW/g (10g avg.)

Test performed by: **J. Turco** Initial:

Probe SN #s	1-G Cube	Diff from Ave	10-G Cube	Diff from Ave	Robot
1384	4.50	1.5%	2.97	1.4%	**R1**
1547	4.40	-0.8%	2.91	-0.7%	**R1**
1383	4.46	0.6%	2.95	0.7%	**R1**
1545	4.38	-1.2%	2.89	-1.4%	**R1**
5	NA	#VALUE!	NA	#VALUE!	**NA**
Average	**4.4350**		**2.9300**	**New Measured SAR Value**	
(normalized to 1.0 W, including drift)					

Motorola Internal Use Only FCD-0733 Rev. 3

DIPOLE SAR TARGET - HEAD

Date:	**08/02/07**	Frequency (MHz):	**450**
Lab Location:	NE	Mixture Type:	**IEEE Head**
DAE Serial #:	406	Ambient Temp.(°C):	21.7

Tissue Characteristics

Permitivity:	43.3	Phantom Type/SN:	80302002A-S7
Conductivity:	0.84	Distance (mm):	15
Tissue Temp.(°C):	20.9		

Reference Source:	Dipole	Power to Dipole:	250 mW
Reference SN:	**1002**		

Target SAR Value: **4.9** mW/g (1g avg.), **3.3** mW/g (10g avg.)
(normalized to 1.0 W)

New Target:

Average Measured SAR Value: **4.78** mW/g (1g avg.), **3.19** mW/g (10g avg.)

Percent Difference From Target (MUST be within k=2 Uncertainty): **-2.50%** (1g ave)
-3.41% (10g ave)

Test performed by: **Ed Church** Initial: E.C

Probe SN #s	1-G Cube	Diff from Ave	10-G Cube	Diff from Ave	Robot
1393	4.75	-0.58%	3.16	-0.86%	**R3**
1384	4.83	1.10%	3.20	0.39%	**R3**
1547	4.82	0.89%	3.21	0.71%	**R3**
1383	4.71	-1.41%	3.18	-0.24%	**R3**
		-100.00%		-100.00%	
Average	4.7775		3.1875	New Measured SAR Value	
			(normalized to 1.0 W, including drift)		

DIPOLE SAR TARGET - BODY

Date:	08/01/07	Frequency (MHz):	450
Lab Location:	NE	Mixture Type:	FCC Body
DAE Serial #:	406	Ambient Temp.(°C):	20.4

Tissue Characteristics

Permitivity:	56.0	Phantom Type/SN:	80302002B-S8
Conductivity:	0.90	Distance (mm):	15
Tissue Temp.(°C):	20.4		

Reference Source:	Dipole	Power to Dipole:	250 mW
Reference SN:	1002		

New Target:

Average Measured SAR Value: **4.40** mW/g(1g avg.), **2.91** mW/g (10g avg.)

Test performed by: **C. Miller** Initial:

Probe SN #s	1-G Cube	Diff from Ave	10-G Cube	Diff from Ave	Robot
1393	4.37	-0.7%	2.93	0.6%	R3
1383	4.47	1.6%	2.90	-0.4%	R3
1384	4.47	1.6%	2.97	2.0%	R3
1547	4.29	-2.5%	2.85	-2.1%	Rx
5		-100.0%		-100.0%	Rx
Average	**4.4000**		**2.9125**	**New Measured SAR Value**	
(normalized to 1.0 W, including drift)					

Motorola Internal Use Only FCD-0733 Rev. 4

APPENDIX E
DUT Scans (Shortened scans & Highest SAR configurations)

Shortened Scan Results

Motorola Government & Public Safety EME Laboratory

Date/Time: 2/22/2008 2:15:03 PM

Robot# / Run#: DASY4-FL-1 / JsT-Face-080222-02
Phantom# / Tissue Temp.: 80302002A-S7 / 19.9 (C)
DUT Model# / Serial#: PMUE1966A-AAH65RDC9AA2AN / 018TDQ1005
Antenna / TX Freq.: NAE6522A / 438.0000 (MHz)
Battery: NNTN4497C
Carry Acc. / Cable Acc.: None / None
Start Power: 4.67 (W)

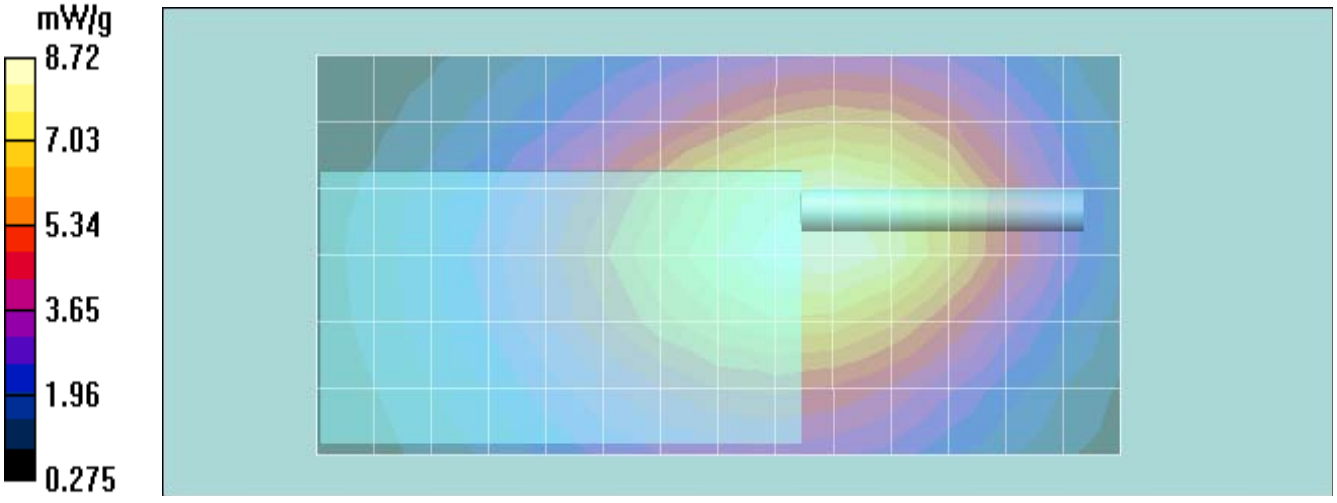
Comments: Shortened Scan at the face
Shortened scan run time 7 minutes.
Representative "normal" scan run time was 19 minutes
"Shortened" scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 5.12mW/g; 10-g Avg. = 3.78mW/g
"Normal" scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 4.83mW/g; 10-g Avg. = 3.55mW/g
(See part 1 of 2 section 9.0 run# JsT-Face-080214-08)

Probe: ET3DV6R - SN1545, Calibrated: 8/28/2007, ConvF(6.66, 6.66, 6.66)
Electronics: DAE3 Sn363, Calibrated: 4/24/2007
Duty Cycle: 1:1, Medium parameters used: f = 454 MHz; σ = 0.84 mho/m; ε_r = 43.9; ρ = 1000 kg/m3

Face Scan/5x5x7 Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 112.7 V/m; Power Drift = -0.548 dB
Peak SAR (extrapolated) = 12.4 W/kg
SAR(1 g) = 9.02 mW/g; SAR(10 g) = 6.66 mW/g
Maximum value of SAR (measured) = 9.41 mW/g

Face Scan/Area Scan (61x141x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 109.2 V/m; Power Drift = -0.697 dB
Motorola Fast SAR: SAR(1 g) = 8.47 mW/g; SAR(10 g) = 6.25 mW/g
Maximum value of SAR (interpolated) = 8.92 mW/g

Face Scan/Z Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 8.48 mW/g



Highest SAR at the Face

Motorola Government & Public Safety EME Laboratory

Date/Time: 2/14/2008 1:05:05 PM

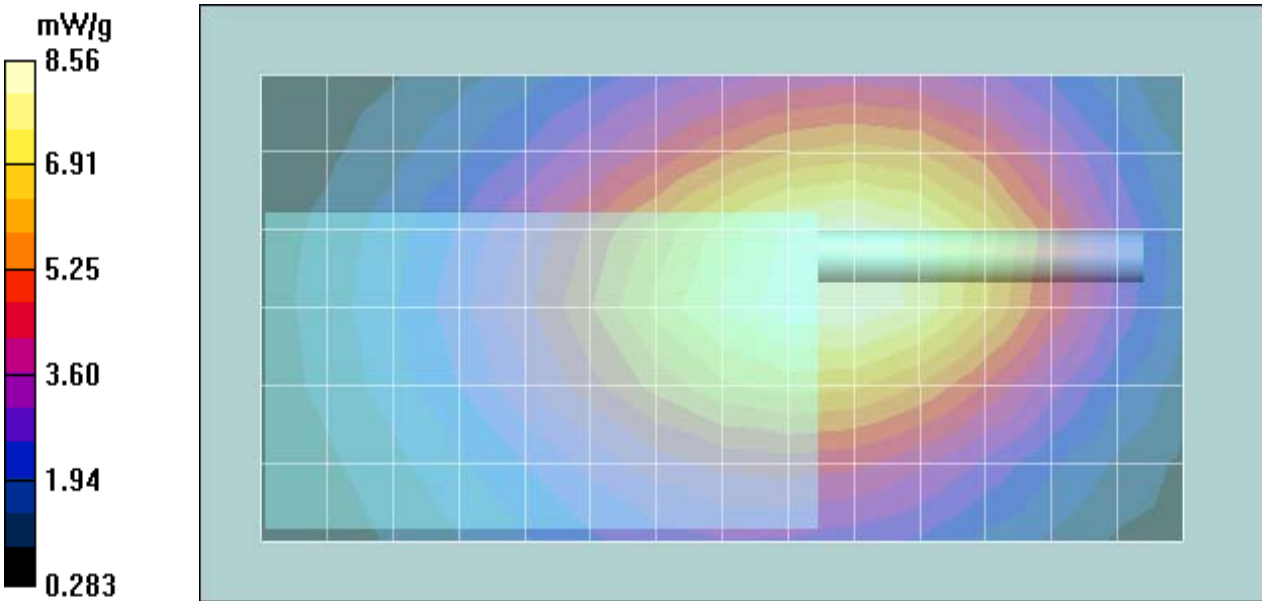
Robot# / Run#: DASY4-FL-1 / JsT-Face-080214-05
Phantom# / Tissue Temp.: 80302002A-S7 / 21.3 (C)
DUT Model# / Serial#: PMUE1966A-AAH65RDC9AA2AN / 018TDQ1005
Antenna / TX Freq.: NAE6522A / 438.0000 (MHz)
Battery: NNTN4497C
Carry Acc. / Cable Acc.: None / None
Start Power: 4.68 (W)

Comments:

Probe: ET3DV6R - SN1545, Calibrated: 8/28/2007, ConvF(6.66, 6.66, 6.66)
Electronics: DAE3 Sn363, Calibrated: 4/24/2007
Duty Cycle: 1:1, Medium parameters used: f = 454 MHz; σ = 0.84 mho/m; ε_r = 44.1; ρ = 1000 kg/m3

Face Scan/Area Scan (61x141x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 109.4 V/m; Power Drift = -0.718 dB
Motorola Fast SAR: SAR(1 g) = 8.43 mW/g; SAR(10 g) = 6.22 mW/g
Maximum value of SAR (interpolated) = 8.88 mW/g

Face Scan/Z Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 8.41 mW/g



Highest SAR at the Body

Motorola Government & Public Safety EME Laboratory

Date/Time: 2/14/2008 3:22:14 PM

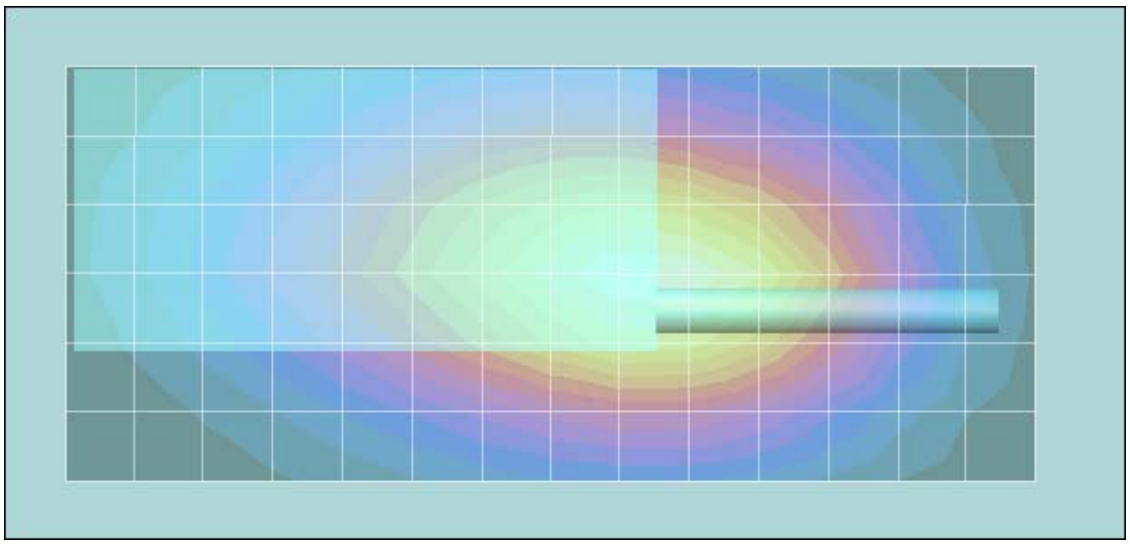
Robot# / Run#: DASY4-FL-1 / JsT-Ab-080214-09
Phantom# / Tissue Temp.: 80302002B-S8 / 20.5 (C)
DUT Model# / Serial#: PMUE1966A-AAH65RDC9AA2AN / 018TDQ1005
Antenna / TX Freq.: NAE6522A / 438.0000 (MHz)
Battery: NNTN4497C
Carry Acc. / Cable Acc.: HLN6602A / HMN9030A
Start Power: 4.69 (W)
Comments: Full Scan

Probe: ET3DV6R - SN1545, Calibrated: 8/28/2007, ConvF(7.14, 7.14, 7.14)
Electronics: DAE3 Sn363, Calibrated: 4/24/2007
Duty Cycle: 1:1, Medium parameters used: f = 454 MHz; σ = 0.93 mho/m; ε_r = 56.4; ρ = 1000 kg/m3

Ab Scan/5x5x7 Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 108.3 V/m; Power Drift = -1.10 dB
Peak SAR (extrapolated) = 12.3 W/kg
SAR(1 g) = 8.59 mW/g; SAR(10 g) = 6.18 mW/g
Maximum value of SAR (measured) = 9.03 mW/g

Ab Scan/Area Scan (61x141x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 108.3 V/m; Power Drift = -1.10 dB
Motorola Fast SAR: SAR(1 g) = 9.4 mW/g; SAR(10 g) = 6.87 mW/g
Maximum value of SAR (interpolated) = 9.92 mW/g

Ab Scan/Z Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 8.76 mW/g

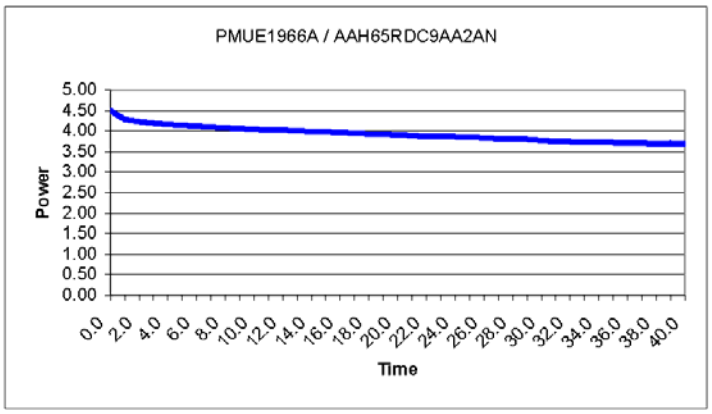


APPENDIX F
DUT Supplementary Data (Power Slump)

Model # PMUE1966A / AAH65RDC9AA2AN
Serial # 018TDQ1005

Battery	NNTN4497C	**Transmit Mode**	CW
Frequency	438.0 MHz	**Audio Accessory**	HMN9030A
Date	2/26/2008		

TX TIME (Minutes)	**Meaured Power** (Watts)
0.0	4.50
1.0	4.28
2.0	4.23
3.0	4.19
4.0	4.16
5.0	4.14
6.0	4.12
7.0	4.10
8.0	4.08
9.0	4.06
10.0	4.04
11.0	4.02
12.0	4.02
13.0	4.00
14.0	3.99
15.0	3.98
16.0	3.96
17.0	3.95
18.0	3.93
19.0	3.92
20.0	3.91
21.0	3.89
22.0	3.86
23.0	3.87
24.0	3.86
25.0	3.85
26.0	3.83
27.0	3.81
28.0	3.81
29.0	3.80
30.0	3.77
31.0	3.75
32.0	3.74
33.0	3.73
34.0	3.72
35.0	3.72
36.0	3.71
37.0	3.71
38.0	3.69
39.0	3.70
40.0	3.69



APPENDIX G
DUT Test Position Photos

Fig 1: Highest S.A.R Test Position (Body);
Antenna model NAE6522A
DUT with Universal Chest Pack HLN6602A against the phantom;
Worst case audio acc. Model HMN9030A remote speaker microphone attached.

Fig 2: Highest S.A.R Test Position (Face);
Antenna model NAE6522A
DUT front side separated 2.5cm from the phantom; no audio accessory attached