


MOTOROLA


Certificate Number: 1449-01

FCC ID: AZ489FT4865
DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 2 of 2

Government & Enterprise Mobility Solutions
EME Test Laboratory
8000 West Sunrise Blvd
Fort Lauderdale, FL. 33322

Date of Report: 3/31/06
Report Revision: Rev. O
Report ID: FCC rpt PCII XTS2500 UHF PSM 060331_SR3337

Responsible Engineer: Michael Sailsman (Sr. Staff Eng.)
Date/s Tested: 2/8/06, 3/11/06 & 3/20/06
Manufacturer/Location: IL23
Sector/Group/Div.: GEMS/GTDG
Date submitted for test: 1/24/06
DUT Description: Portable; 16 channel no keypad or display
Test TX mode(s): CW
Max. Power output: 5.9W
Nominal Power: 1-5 watts
Tx Frequency Bands: 380-470MHz
Signaling type: FM
Model(s) Tested: H66QDC9PW5AN
Model(s) Certified: H66QDC9PW5AN
Serial Number(s): 407TDY7007
Classification: Occupational/Controlled
Rule Part(s): 90



Applicable approved accessories:

Antenna(s):

NAE6546AR (380-435 MHz ¼ wave antenna; -7dBi gain), NAE6547 (435-470MHz ½ wave antenna; -8dBi gain),
 NAE6548AR (470-520MHz ½ wave dipole; -8dBi gain)

Battery(ies):

NTN9857B (1800mAh NiMH Ultra high capacity. Factory Mutual Intrinsically safe)

Body worn accessory(ies):

NA

Audio/Data cable accessory(ies):

RMN5074A (18 inch PSM)

Max. Calc. 1-g/10-g Avg. SAR: 7.03/4.87 W/kg (Body)

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.

This reporting format is consistent with the test report guidelines of the TIA TSB-150 December 2004
 The results and statements contained in this report pertain only to the device(s) evaluated.

Deanna Zakharia's signature on file for Ken Enger
Ken Enger GEMS EME Lab Senior Resource Manager,
Laboratory Director,

Approval Date: 4/3/06

Certification Date: 4/3/06

Certification No.: 060317AD/ 060318AD/ 060319AD

Appendix D

Test System Verification Scans

Note: Dipole validation scans at the head from SPEAG are provided in APPENDIX D. The GEMS EME lab validated the dipole to the applicable IEEE system performance targets. Within the same day system validation was performed using FCC body tissue parameters to generate the system performance target values for body at the applicable frequency. The results of the GEMS EME system performance validation are provided herein. To assess the isotropic characteristics of the measurement probe, two system performance zoom scans (0 and 90 degrees) were measured. The results were averaged together and adjusted to account for the power drift in order to obtain the final calculated 1 and 10 gram results.

Motorola GEMS EME Lab**SPEAG 450 MHz Dipole; Model D450V2, SN1002; Test Date: 2/8/06**

Run #: CM-SYSP-450B-060208-01 Sim.Tissue Temp: 21.0 (C)

TX Freq: 450 (MHz) Start power: 250 (mW)

Target: 5.26 mW/g for 1g SAR 3.41 mW/g for 10g SAR

4.93 mW/g calculated 1g-SAR; -6.32 % from target (including drift)

3.20 mW/g calculated 10g-SAR; -6.19 % from target (including drift)

Probe: ET3DV6 - SN1547, Calibrated: 10/25/2005, ConvF(7.2, 7.2, 7.2),

Duty Cycle: 1:1, Medium: 450 MHz FCC Body, Medium parameters used: $f = 450$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 57.6$; $\rho = 1000$ kg/m³; Electronics: DAE3 Sn401, Calibrated: 8/18/2005**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 36.5 V/m; Power Drift = -0.0421 dB

Peak SAR (extrapolated) = 2.10 W/kg

SAR(1 g) = 1.21 mW/g; SAR(10 g) = 0.787 mW/g

Maximum value of SAR (measured) = 1.29 mW/g

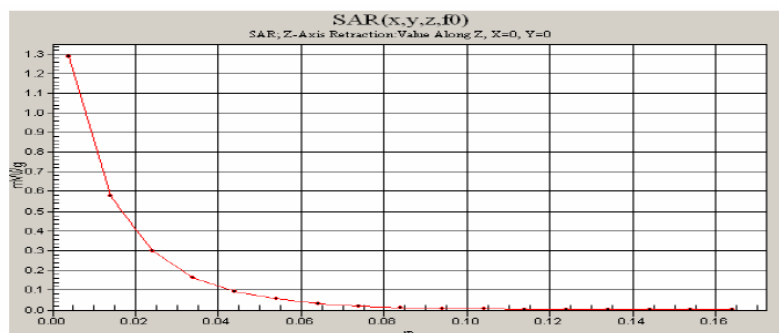
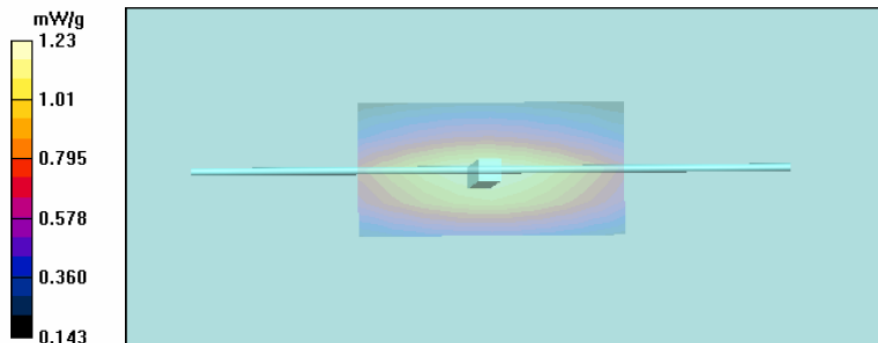
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm;

Reference Value = 36.5 V/m; Power Drift = -0.0421 dB

Peak SAR (extrapolated) = 2.11 W/kg

SAR(1 g) = 1.23 mW/g; SAR(10 g) = 0.796 mW/g

Maximum value of SAR (measured) = 1.30 mW/g



Motorola GEMS EME Lab**SPEAG 450 MHz Dipole; Model D450V2, SN1001; Test Date: 3/11/06**

Run #: ErC-SYSP-450B-060311-01 Sim.Tissue Temp: 20.0 (C)

TX Freq: 450 (MHz) Start power: 250 (mW)

Target: 4.96 mW/g for 1g SAR 3.25mW/g for 10g SAR

4.89 mW/g calculated 1g-SAR; -1.49 % from target (including drift)

3.20 mW/g calculated 10g-SAR; - 1.66 % from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(7.1, 7.1, 7.1),

Duty Cycle: 1:1, Medium: Body 450, Medium parameters used: $f = 450$ MHz; $\sigma = 0.93$ mho/m; $\epsilon_r = 57.5$; $\rho = 1000$ kg/m³ ;

Electronics: DAE3 Sn406, Calibrated: 11/21/2005

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 37.2 V/m; Power Drift = -0.00529 dB

Peak SAR (extrapolated) = 2.04 W/kg

SAR(1 g) = 1.21 mW/g; SAR(10 g) = 0.790 mW/g

Maximum value of SAR (measured) = 1.28 mW/g

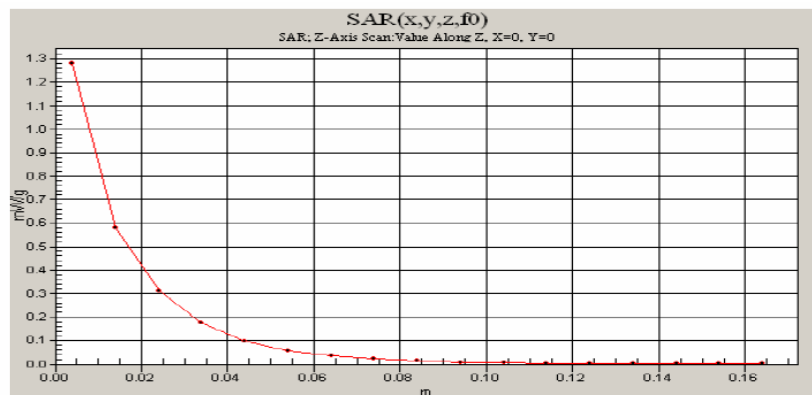
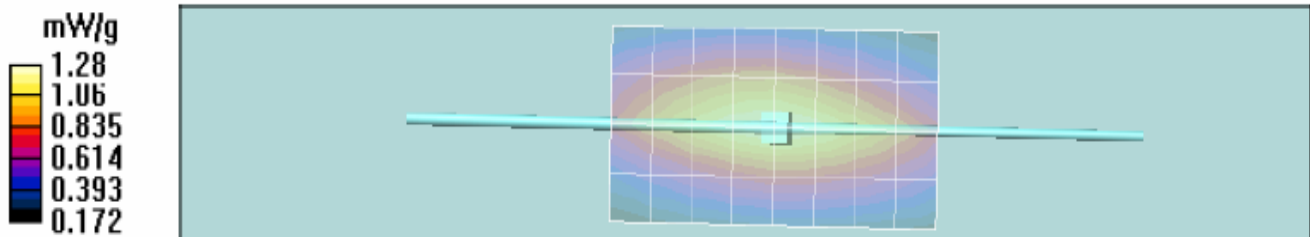
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 37.2 V/m; Power Drift = -0.00529 dB

Peak SAR (extrapolated) = 2.08 W/kg

SAR(1 g) = 1.23 mW/g; SAR(10 g) = 0.805 mW/g

Maximum value of SAR (measured) = 1.30 mW/g



Motorola GEMS EME Lab**SPEAG 450 MHz Dipole; Model D450V2, SN1001; Test Date: 3/20/06**

Run #: HvH-SYSP-450B-060320- 02 Sim.Tissue Temp: 21.4 (C)

TX Freq: 450 (MHz) Start power: 250 (mW)

Target: 4.96 mW/g for 1g SAR 3.25 mW/g for 10g SAR

4.99 mW/g calculated 1g-SAR 0.60 % from target (including drift)

3.24 mW/g calculated 10g-SAR - 0.23 % from target (including drift)

Probe: ET3DV6 - SN1547, Calibrated: 10/25/2005, ConvF(6.91, 6.91, 6.91),

Duty Cycle: 1:1, Medium: 450 MHz FCC Body, Medium parameters used: $f = 450$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 58$; $\rho = 1000$ kg/m³; Electronics: DAE3 Sn401, Calibrated: 8/18/2005**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 37.9 V/m; Power Drift = -0.00854 dB

Peak SAR (extrapolated) = 2.14 W/kg

SAR(1 g) = 1.25 mW/g; SAR(10 g) = 0.807 mW/g

Maximum value of SAR (measured) = 1.32 mW/g

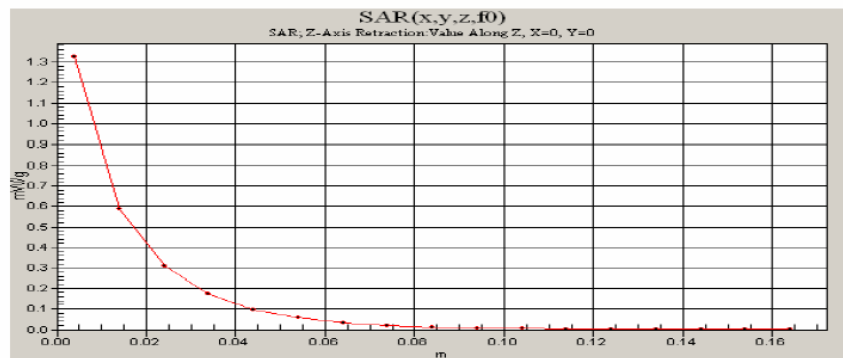
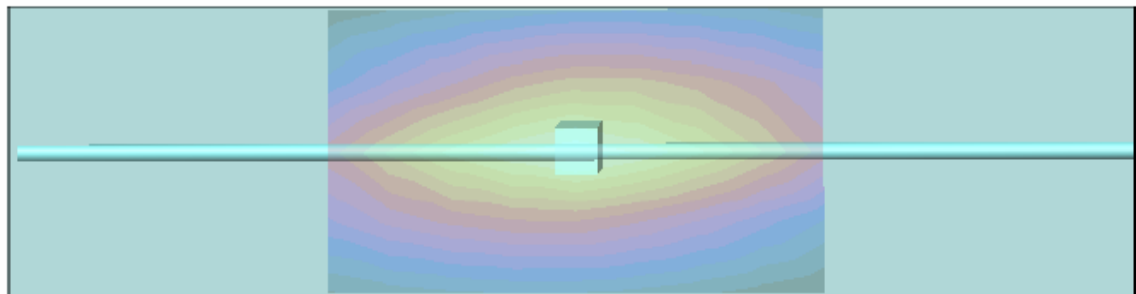
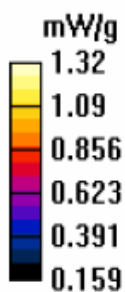
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm;

Reference Value = 37.9 V/m; Power Drift = -0.00854 dB

Peak SAR (extrapolated) = 2.09 W/kg

SAR(1 g) = 1.24 mW/g; SAR(10 g) = 0.811 mW/g

Maximum value of SAR (measured) = 1.31 mW/g



SYSTEM PERFORMANCE CHECK TARGET SAR

Date:	<u>8/5/2005</u>	Frequency (MHz):	<u>450</u>
Lab Location:	<u>GEMS EME</u>	Mixture Type:	<u>FCC Body</u>
Robot System:	<u>GEMS-3</u>	Ambient Temp.(°C):	<u>22.3</u>
Probe Serial #:	<u>1393</u>	Tissue Temp.(°C):	<u>20.5</u>
DAE Serial #:	<u>363</u>		

Tissue Characteristics

Permittivity:	<u>54.4</u>	Phantom Type/SN:	<u>80302002D-S14</u>
Conductivity:	<u>0.92</u>	Distance (mm):	<u>15</u>

Reference Source:	<u>Dipole</u>	(Dipole)
Reference SN:	<u>1001</u>	

Power to Dipole: 250 mW

Measured SAR Value:	<u>1.24</u> mW/g,	<u>0.812</u> mW/g (10g avg.)
Power Drift:	<u>-0.000604</u> dB	

New Target/Measured

SAR Value:	<u>4.96</u> mW/g,	<u>3.25</u> mW/g (10g avg.)
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(normalized to 1.0 W, including drift)

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

Sys. Per. Chk. Form: 021024

DUT: Dipole 450 MHz

Run #: ErC-VAL-450B-050805-02

Sim.Tissue Temp: 20.5 (C)

Robot # GEMS-3

Phantom #: 80302002D-S14

Model #: D450V2

S/N: 1001

TX Freq: 450 (MHz)

Start power: 250 (mW)

Target:

New Body Target:

4.96 mW/g for 1g SAR 3.25 mW/g for 10g SAR

Probe: ET3DV6 - SN1393, Calibrated: 5/20/2005, ConvF(7.18, 7.18, 7.18),

Duty Cycle: 1:1, Medium: 450 MHz Body, Medium parameters used: $\sigma = 0.92$ mho/m, $\epsilon_r = 54.4$; $\rho = 1000$ kg/m³ ;

Electronics: DAE3 Sn363, Calibrated: 5/24/2005

Dipole Validation 450 Body/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 37.9 V/m; Power Drift = -0.000604 dB

Peak SAR (extrapolated) = 2.06 W/kg

SAR(1 g) = 1.24 mW/g; SAR(10 g) = 0.812 mW/g

Maximum value of SAR (measured) = 1.31 mW/g

Dipole Validation 450 Body/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm

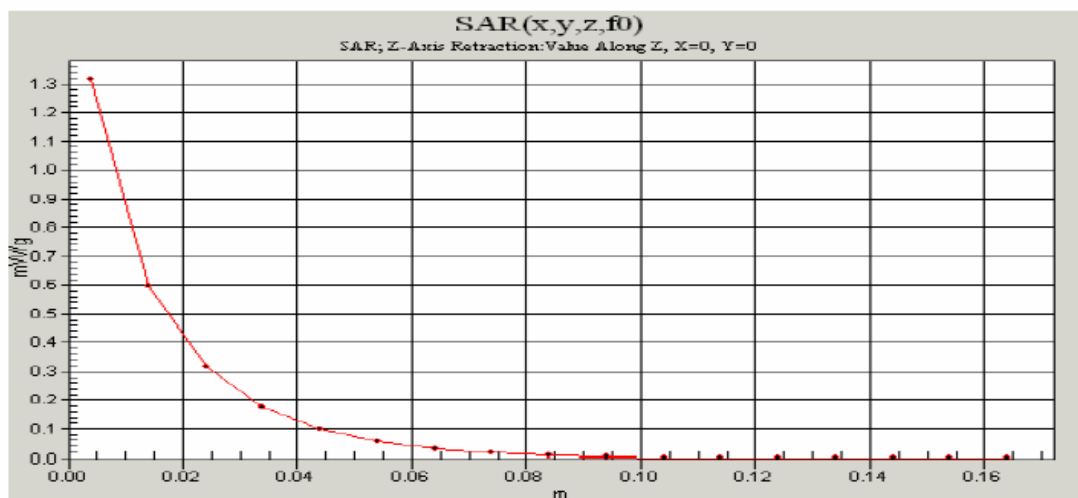
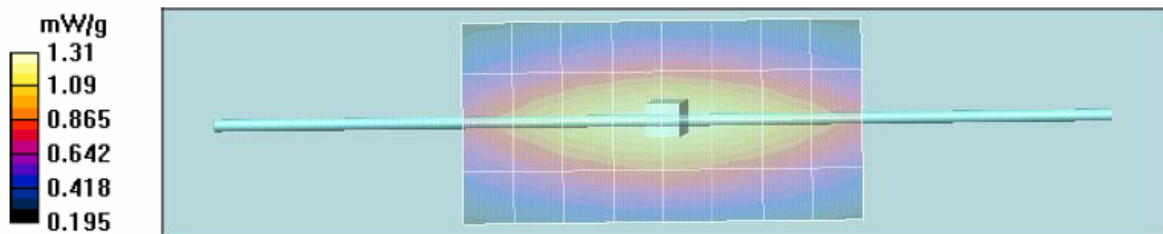
Reference Value = 37.9 V/m; Power Drift = -0.000604 dB

Peak SAR (extrapolated) = 2.06 W/kg

SAR(1 g) = 1.24 mW/g; SAR(10 g) = 0.812 mW/g

Dipole Validation 450 Body/Dipole Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm**Dipole Validation 450 Body/Z-Axis Retraction (1x1x17):** Measurement grid: dx=20mm, dy=20mm, dz=10mm

Maximum value of SAR (measured) = 1.32 mW/g



SYSTEM PERFORMANCE CHECK TARGET SAR

Date:	<u>4/1/2005</u>	Frequency (MHz):	<u>450</u>
Lab Location:	<u>CGISS</u>	Mixture Type:	<u>FCC Body</u>
Robot System:	<u>CGISS-3</u>	Ambient Temp.(°C):	<u>21.7</u>
Probe Serial #:	<u>1545</u>	Tissue Temp.(°C):	<u>21.3</u>
DAE Serial #:	<u>401</u>		

Tissue Characteristics

Permittivity:	<u>55.4</u>	Phantom Type/SN:	<u>80302002B-S8</u>
Conductivity:	<u>0.93</u>	Distance (mm):	<u>15</u>

Reference Source:	<u>Dipole</u>	(Dipole/Handset)
Reference SN:	<u>1002</u>	

Power to Dipole: 250 mW

Measured SAR Value:	<u>1.305</u> mW/g,	<u>0.846</u> mW/g (10g avg.)
Power Drift:	<u>-0.036600</u> dB	

New Target/Measured

SAR Value:	<u>5.26</u> mW/g,	<u>3.41</u> mW/g (10g avg.)
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(normalized to 1.0 W, including drift)

Test performed by: E. Church Initial: EC

Sys. Per. Chk. Form: 021024

DUT: Dipole 450 MHz

Run #: 050401-01

Test operator: E. Church

Robot = GEMS-3

Phantom #: 80302002B-S8

Sim.Tissue Temp: 21.3 (C)

Model #: D450V2

S/N: 1002

TX Freq: 450 (MHz)

Start power: 250 (mW)

Target:

5.26 mW/g for 1g SAR

3.41 mW/g for 10g SAR

5.26 mW/g calculated 1g-SAR; 0 % from target (including drift)

3.41 mW/g calculated 10g-SAR; 0 % from target (including drift)

Probe: ET3DV6 - SN1545, Calibrated: 9/1/2004, ConvF(6.6, 6.6, 6.6),

Duty Cycle: 1:1, Medium: 450 MHz Body, Medium parameters used: $\sigma = 0.93$; mho/m, $\epsilon_r = 55.4$; $\rho = 1000$ kg/m³;

Electronics: DAE3 Sn401, Calibrated: 8/25/2004

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 37 V/m; Power Drift = -0.0 dB

Peak SAR (extrapolated) = 2.25 W/kg

SAR(1 g) = 1.29 mW/g; SAR(10 g) = 0.834 mW/g

Maximum value of SAR (measured) = 1.37 mW/g

System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 37 V/m; Power Drift = -0.0 dB

Peak SAR (extrapolated) = 2.29 W/kg

SAR(1 g) = 1.32 mW/g; SAR(10 g) = 0.857 mW/g

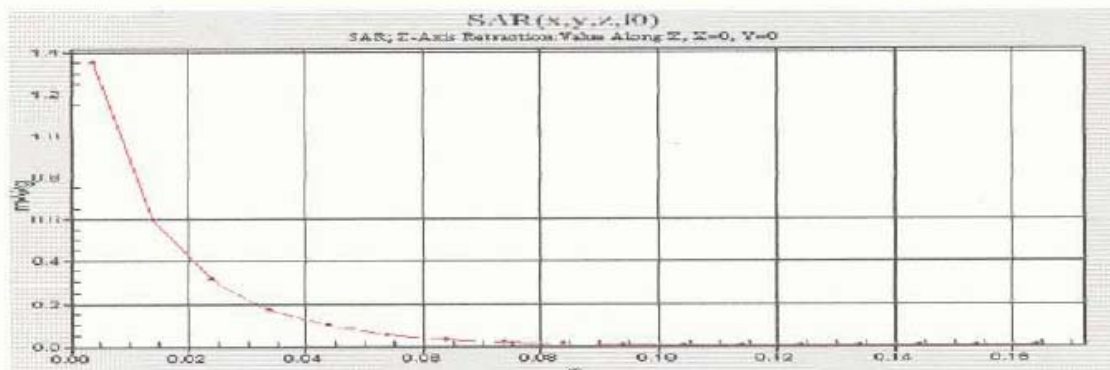
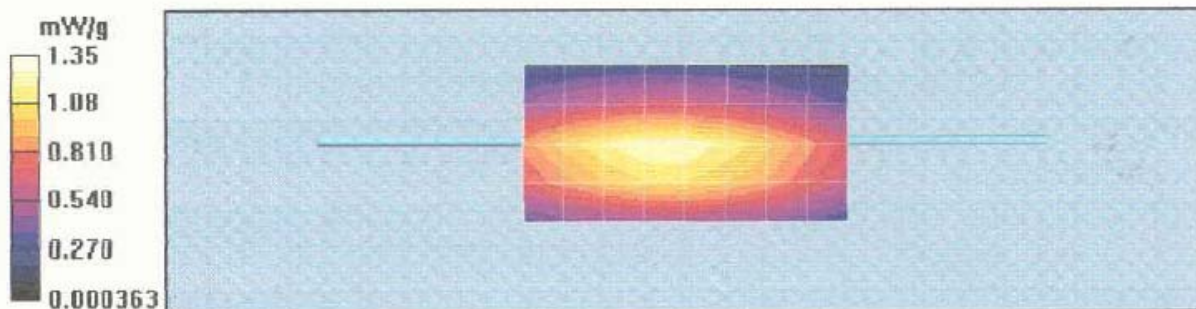
Maximum value of SAR (measured) = 1.41 mW/g

System Performance Check/Dipole Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.27 mW/g

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

Maximum value of SAR (measured) = 1.35 mW/g



Appendix E

DUT Scans (Shortened scans & Highest SAR configurations)

Shortened Scan Results

Motorola GEMS EME Laboratory

Test Date: 3/11/06

Run #: ErC Ab 060311-19 Sim. Tissue Temp: 20.0 (C)

Model #: H66QDC9PW5AN SN: 407TDY7007

Antenna: NAE6547AR TX Freq: 452.225 MHz

Battery: NTN9857B Start power: 5.81 W

Carry acc.: PSM Belt Clip Audio/Data acc.: PSM RMN5074A

Comments: SHORT SCAN

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(7.1, 7.1, 7.1)

Duty Cycle: 1:1, Medium: 425 MHz FCC Body, Medium parameters used: $f = 425$ MHz; $\sigma = 0.91$ mho/m; $\epsilon_r = 57.7$; $\rho = 1000$ kg/m³; Electronics: DAE3 Sn406, Calibrated: 11/21/2005

AB Scan/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 119.6 V/m; Power Drift = -0.547 dB

Peak SAR (extrapolated) = 20.8 W/kg

SAR(1 g) = 12.2 mW/g; SAR(10 g) = 8.45 mW/g

Comments: Short Scan at the body w/ body worn accessory against phantom

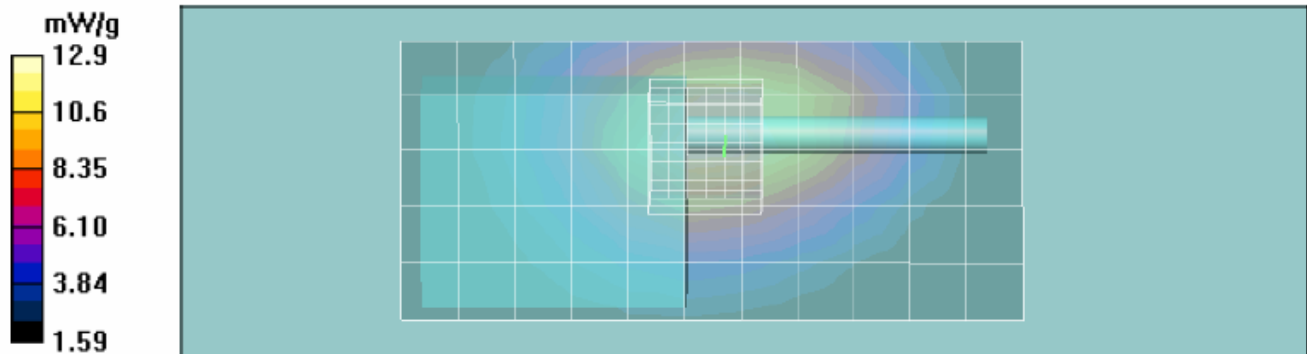
Shortened scan reflect highest S.A.R. producing configuration; Run time 11 minutes.

Representative "normal" scan run time was 18 minutes

"Shortened" scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 7.03mW/g; 10-g Avg. = 4.87mW/g

"Normal" scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 6.72mW/g; 10-g Avg. = 4.65mW/g

(see part 1 of 2 section 9.0 run # ErC-Ab-060311-18)



Highest SAR Configurations Results

Motorola GEMS EME Laboratory

Test Date: 3/11/06

Run #: ErC Ab 060311-18 Sim. Tissue Temp: 20.0 (C)

Model #: H66QDC9PW5AN SN: 407TDY7007

Antenna: NAE6547AR TX Freq: 452.225 MHz

Battery: NTN9857B Start power: 5.82 W

Carry acc.: PSM Belt Clip Audio/Data acc.: PSM RMN5074A

Comments: FULL SCAN

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(7.1, 7.1, 7.1)

Duty Cycle: 1:1, Medium: 425 MHz FCC Body, Medium parameters used: $f = 425$ MHz; $\sigma = 0.91$ mho/m; $\epsilon_r = 57.7$; $\rho = 1000$ kg/m³; Electronics: DAE3 Sn406, Calibrated: 11/21/2005

AB Scan/Z Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Maximum value of SAR (measured) = 11.5 mW/g

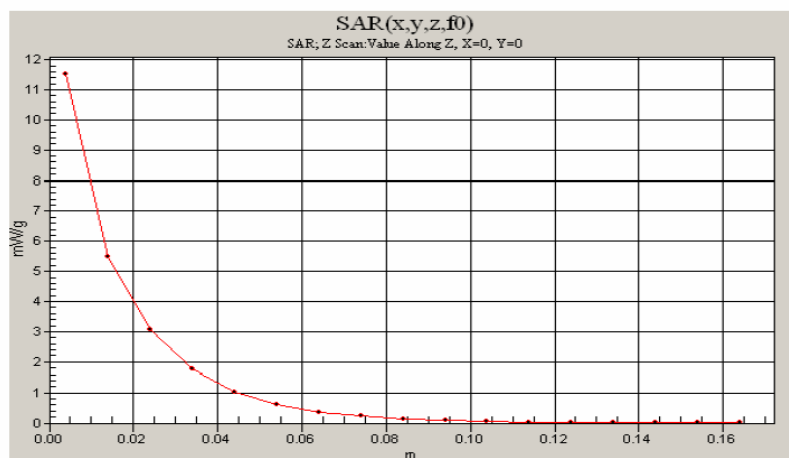
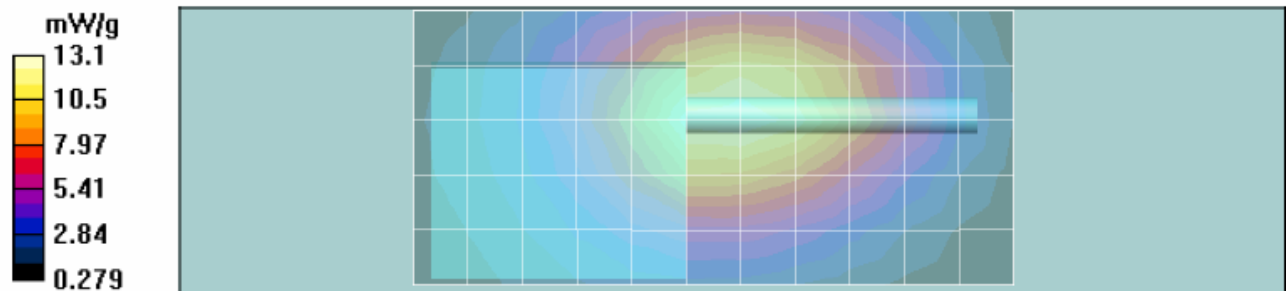
AB Scan/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 119.7 V/m; Power Drift = -0.468 dB

Peak SAR (extrapolated) = 19.0 W/kg

SAR(1 g) = 11.9 mW/g; SAR(10 g) = 8.24 mW/g

Maximum value of SAR (measured) = 12.4 mW/g

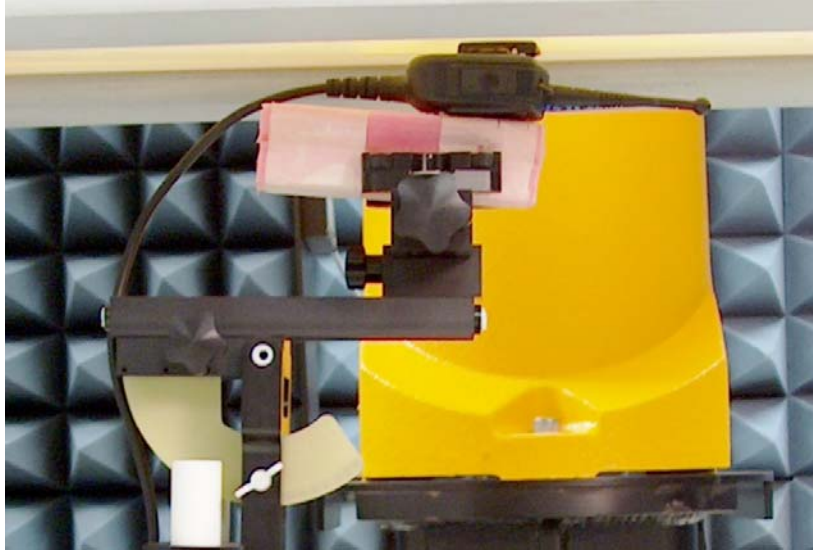


APPENDIX F
DUT Supplementary Data (e.g. Power slump)

Not applicable for this report.

Appendix G DUT Test Position Photos

Figure 1: Highest S.A.R. Test Position (Body)
Same position used for each offered antenna



Appendix H DUT and Accessory Photos

New offered PSM RMN5074A front and side view



Appendix I
DUT Body-worn Separation Distances

Carry Case Models	Tested ?	Min. Separation distances between DUT antenna(s) and phantom surface. (mm)	Comments
RMN5074A	Yes	18-23	PSM w/ clip