Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN122

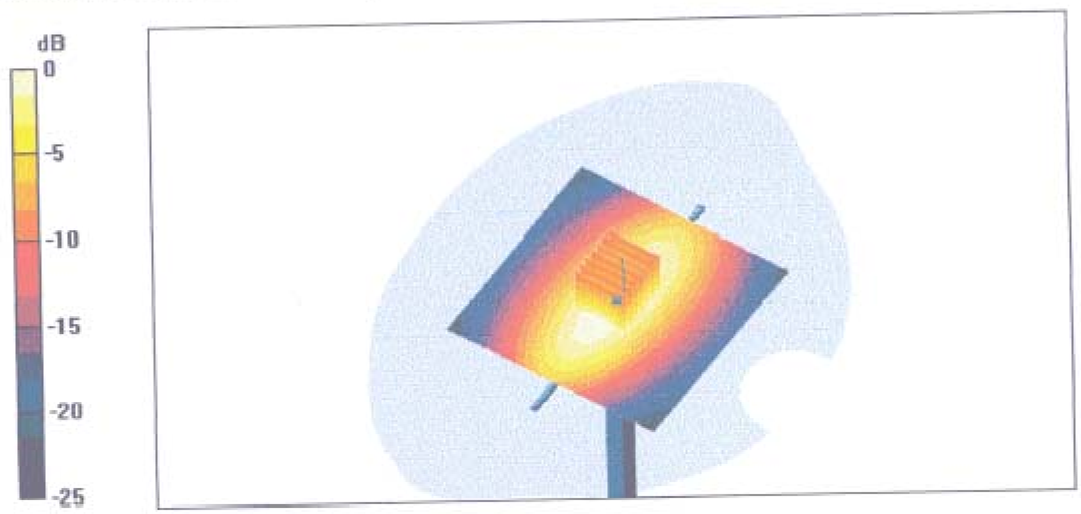
Communication System: CW-900; Frequency: 900 MHz;Duty Cycle: 1:1
Medium: Muscle 900 MHz (σ = 1.04 mho/m, ε_r = 54.38, ρ = 1000 kg/m^3)
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(6.3, 6.3, 6.3); Calibrated: 1/18/2003
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: *DAE3 - SN411; Calibrated: 1/16/2003*
- Phantom: SAM with CRP - TP1006; Type: SAM 4.0; Serial: TP:1006
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.8 Build 60

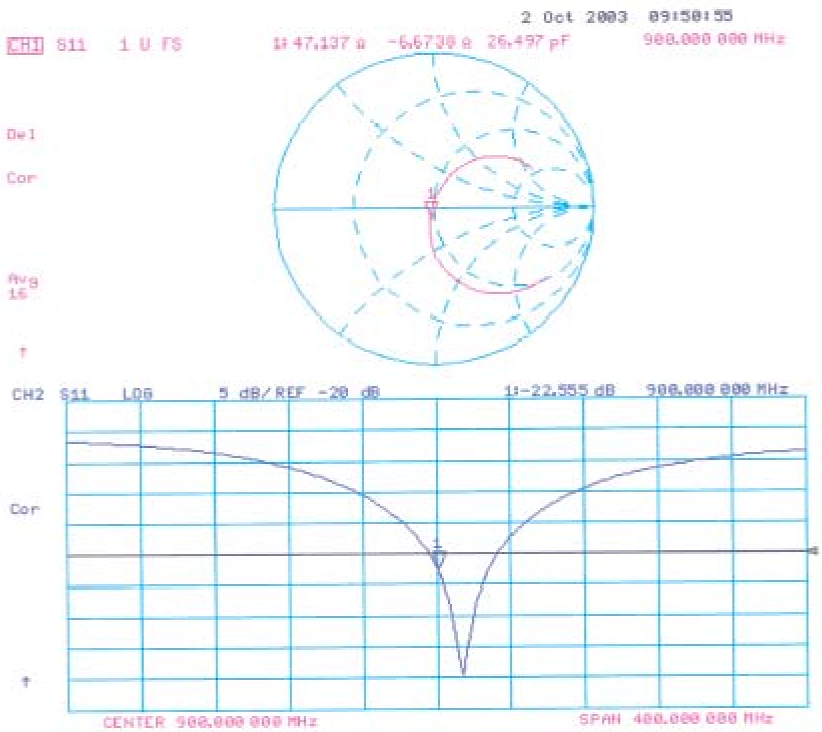
Pin = 250 mW; d = 15 mm/Area Scan (81x81x1): Measurement grid: *dx=15mm*, dy=15mm
Reference Value = 55 V/m
Power Drift = 0.0 dB
Maximum value of SAR = 2.87 mW/g

Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 3.92 W/kg
SAR(1 g) = 2.67 mW/g; SAR(10 g) = 1.73 mW/g
Reference Value = 55 V/m
Power Drift = 0.0 dB
Maximum value of SAR = 2.88 mW/g



0 dB = 2.88mW/g

Body


2 Oct 2003 09:50:55
CH1 S11 1 U FS 1: 47.137 Ω -5.6730 Ω 26.497 pF 900.000 000 MHz
Del
Cor
Avg
16
CH2 S11 LOG 5 dB/ REF -20 dB 1:-22.555 dB 900.000 000 MHz
Cor
CENTER 900.000 000 MHz SPAN 400.000 000 MHz

APPENDIX D - TEST SYSTEM VERIFICATIONS SCANS

Liquid Measurement Result

2004-12-18

Simulant	Freq [MHz]	Parameters	Liquid Temp [ºC]	Target Value	Measured Value	Deviation	Limits [%]
Body	835	ε_r	22.0	55.2	55.4	0.36	±5
		σ	22.0	0.97	0.93	-4.12	±5
		1g SAR	22.0	8.872	8.93	0.65	±10
Head	835	ε_r	22.0	41.5	41.4	-0.24	±5
		σ	22.0	0.90	0.91	1.11	±5
		1g SAR	22.0	9.5	9.99	5.11	±10

ε_r = relative permittivity, σ = conductivity and ρ=1000kg/m^3

Body Forward Power = 20.41 dBm = 109.90 mW
Head Forward Power = 20.30 dBm = 107.16 mW

2004-12-08

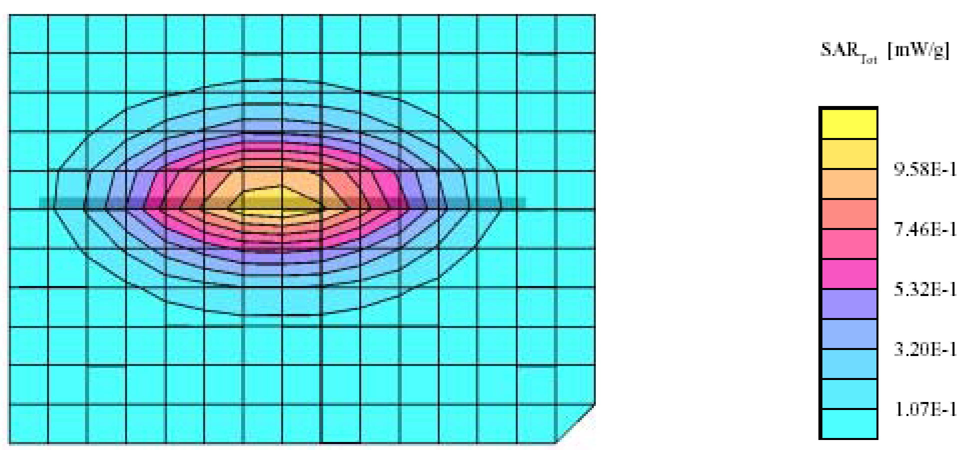
Simulant	Freq [MHz]	Parameters	Liquid Temp [ºC]	Target Value	Measured Value	Deviation	Limits [%]
Body	1900	ε_r	22.0	53.3	53.4	-0.19	±5
		σ	22.0	1.52	1.50	1.32	±5
		1g SAR	22.0	24.97	24.89	0.32	±10
Head	1900	ε_r	22.0	40.0	39.2	2.00	±5
		σ	22.0	1.4	1.41	-0.71	±5
		1g SAR	22.0	39.7	38.64	2.67	±10

ε_r = relative permittivity, σ = conductivity and ρ=1000kg/m^3

Body Forward Power = 20.24 dBm = 105.68 mW
Head Forward Power = 20.04 dBm = 100.93 mW

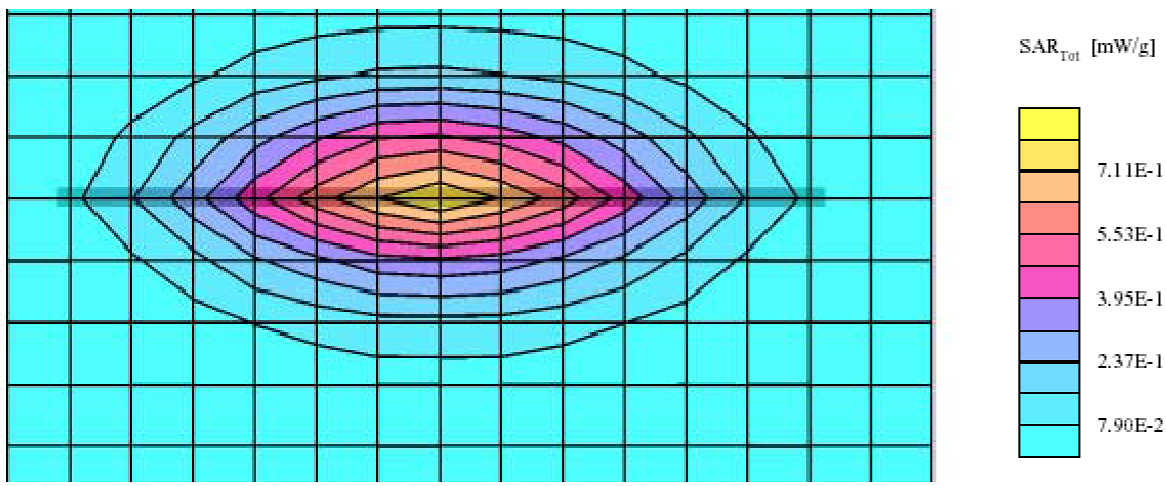
System Validation 835 MHz Body liquid (Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, Forward Power = 20.41 dBm, 12/18/2004)

SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 835 MHz
Probe: ES3DV2 - SN3019; ConvF(6.40,6.40,6.40); Crest factor: 1.0; 835 (Body) MHz: σ = 0.93 mho/m ε_r = 55.4 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.981 mW/g, SAR (10g): 0.608 mW/g, (Worst-case extrapolation)
Coarse: Dx = 12.0, Dy = 12.0, Dz = 10.0
Powerdrift: -0.01 dB



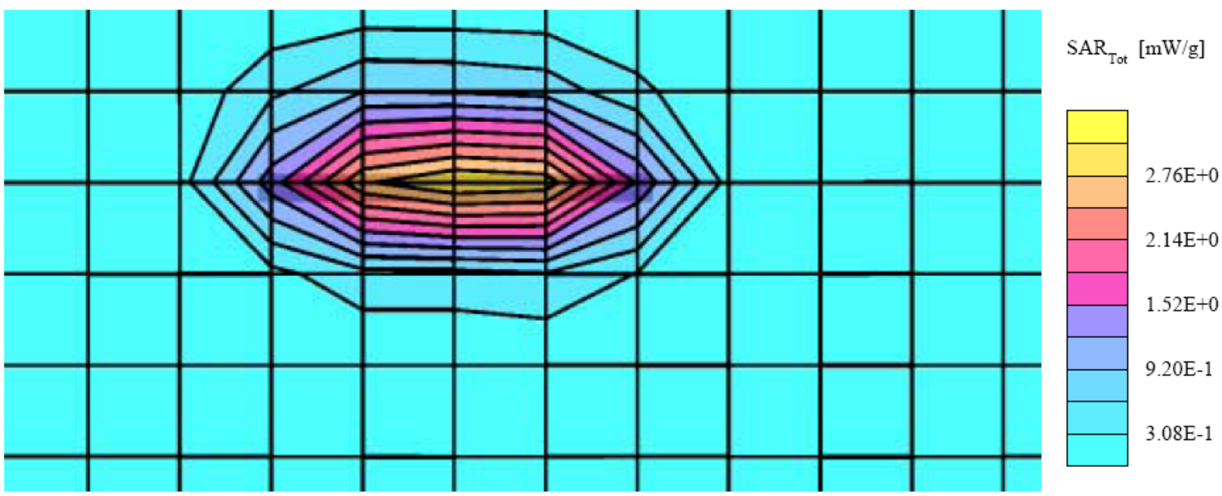
System Validation 835 MHz Head liquid (Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, Forward Power = 20.3 dBm ,12/18/2004)

SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 835 MHz
Probe: ES3DV2 - SN3019; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 835 MHZ Head: σ = 0.88 mho/m ε_r = 41.7 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.07 mW/g, SAR (10g): 0.618 mW/g, (Worst-case extrapolation)
Coarse: Dx = 12.0, Dy = 12.0, Dz = 10.0
Powerdrift: -0.00 dB



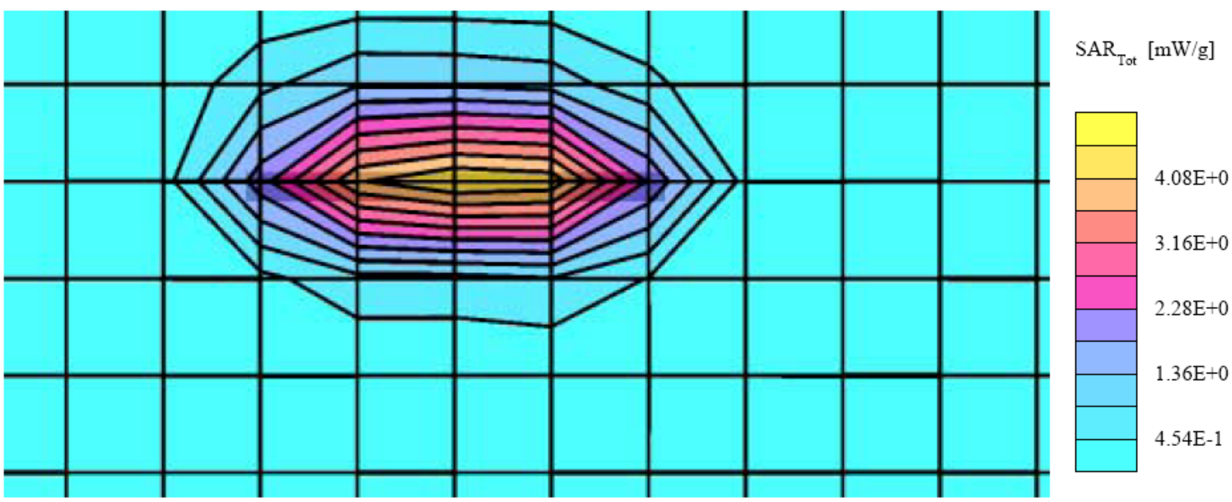
1900 MHz Body Liquid System Validation (Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, Forward Power = 20.24 dBm, 12/8/2004)

SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 1900 MHz
Probe: ET3DV2 - SN3019; ConvF(4.60,4.60,4.60); Crest factor: 1.0; Body Liquid 1900 MHz: σ = 1.50 mho/m ε_r = 53.4 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 2.63 mW/g, SAR (10g): 1.18 mW/g, (Worst-case extrapolation)
Coarse: Dx = 12.0, Dy = 12.0, Dz = 10.0
Powerdrift: -0.00 dB



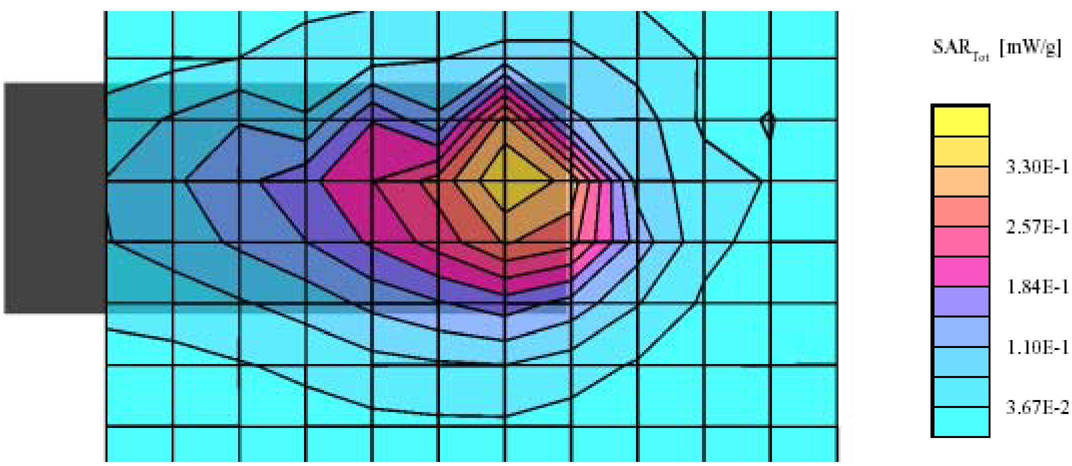
1900 MHz Head Liquid System Validation (Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, Forward Power = 20.04 dBm, 12/8/2004)

SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 1900 MHz
Probe: ET3DV2 - SN3019; ConvF(4.70,4.70,4.70); Crest factor: 1.0; Head Liquid 1900 MHz: $\sigma = 1.41$ mho/m $\varepsilon_r = 39.2$ $\rho = 1.00$ g/cm^3
Cube 5x5x7: SAR (1g): 3.90 mW/g, SAR (10g): 1.72 mW/g, (Worst-case extrapolation)
Coarse: Dx = 12.0, Dy = 12.0, Dz = 10.0
Powerdrift: -0.02 dB



APPENDIX E - EUT SCANS

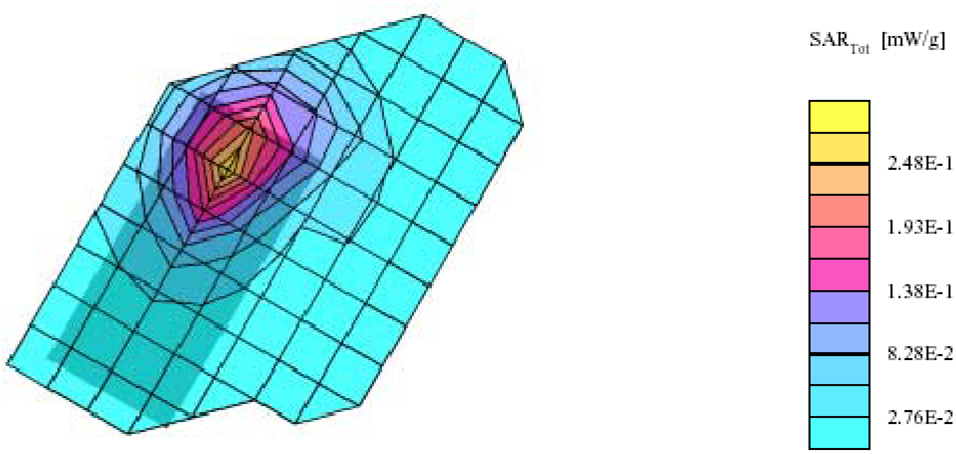
Pegasus Telecom, Model #: Z360 (1.5 cm separation to flat phantom, Middle Channel,
Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, Middle Channel, 12/18/2004)
SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 837 MHz
Probe: ES3DV2 - SN3019; ConvF(6.10,6.10,6.10); Crest factor: 8.0; 850 MHZ Body : σ = 0.93 mho/m ε_r = 55.4 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.352 mW/g, SAR (10g): 0.212 mW/g, (Worst-case extrapolation)
Coarse: Dx = 12.0, Dy = 13.0, Dz = 10.0
Powerdrift: -0.00 dB



Plot #1

Pegasus Telecom, Model: Z360 (Left Head, Cheek, Middle Channel, Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, 12/18/2004)

SAM Phantom; Left Hand Section; Position: (90°,60°); Frequency: 837 MHz
Probe: ET3DV6 - SN1604; ConvF(6.45,6.45,6.45); Crest factor: 8.0; Head Liquid 835 MHz: $\sigma = 0.88$ mho/m $\varepsilon_r = 41.7$ $\rho = 1.00$ g/cm^3
Cube 5x5x7: SAR (1g): 0.256 mW/g, SAR (10g): 0.155 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: 0.02 dB



Plot #2

Pegasus Telecom, Model: Z360 (Left Head, Tilted, Middle Channel, Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, 12/18/2004)

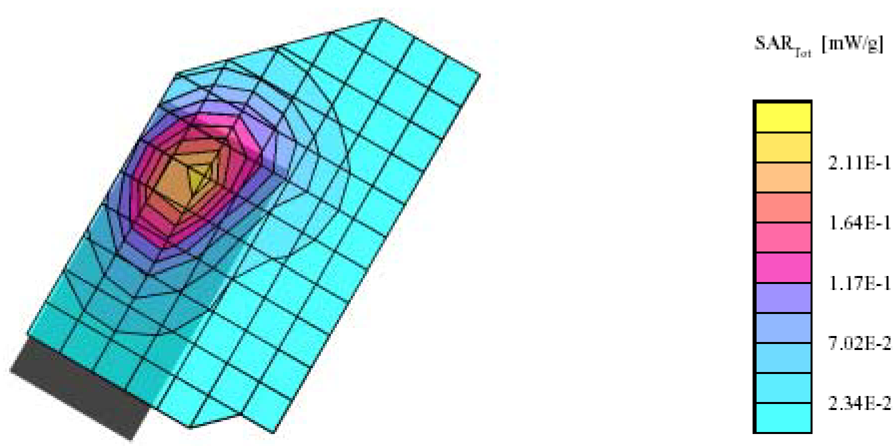
SAM Phantom; Left Hand Section; Position: (90°,60°); Frequency: 837 MHz

Probe: ET3DV6 - SN1604; ConvF(6.45,6.45,6.45); Crest factor: 8.0; Head Liquid 835 MHz: σ = 0.88 mho/m ε_r = 41.7 ρ = 1.00 g/cm³

Cube 5x5x7: SAR (1g): 0.231 mW/g, SAR (10g): 0.142 mW/g, (Worst-case extrapolation)

Coarse: Dx = 12.0, Dy = 12.0, Dz = 10.0

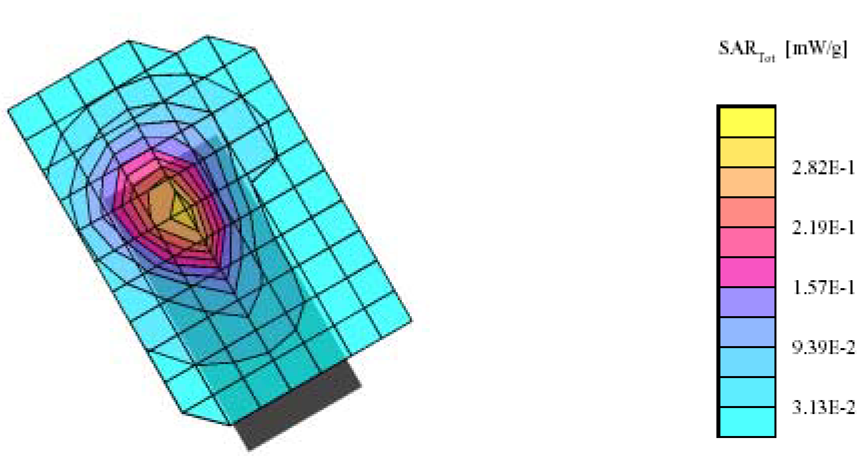
Powerdrift: 0.00 dB



Plot #3

Pegasus Telecom, Model: Z360 (Right Head, Cheek, Middle Channel, Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, 12/18/2004)

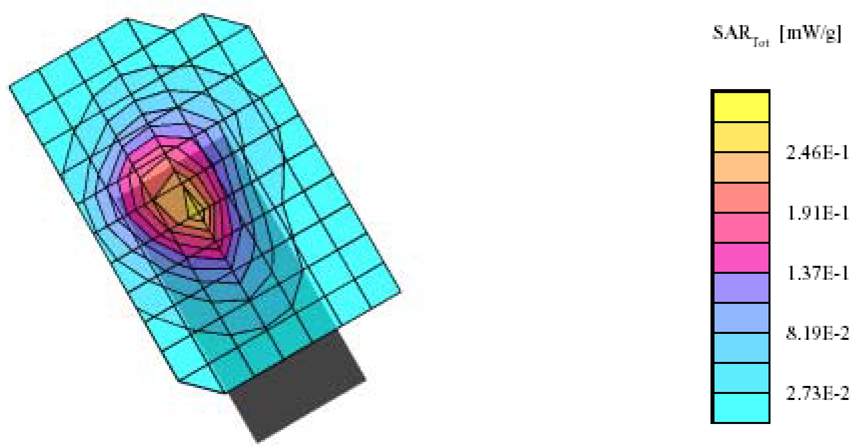
SAM Phantom; Righ Hand Section; Position: (90°,120°); Frequency: 837 MHz
Probe: ET3DV6 - SN1604; ConvF(6.45,6.45,6.45); Crest factor: 8.0; Head Liquid 835 MHz: σ = 0.88 mho/m ε_r = 41.7 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.290 mW/g, SAR (10g): 0.175 mW/g, (Worst-case extrapolation)
Coarse: Dx = 12.0, Dy = 12.0, Dz = 10.0
Powerdrift: 0.04 dB



Plot #4

Pegasus Telecom, Model: Z360 (Right Head, Tilted , Middle Channel, Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, 12/18/2004)

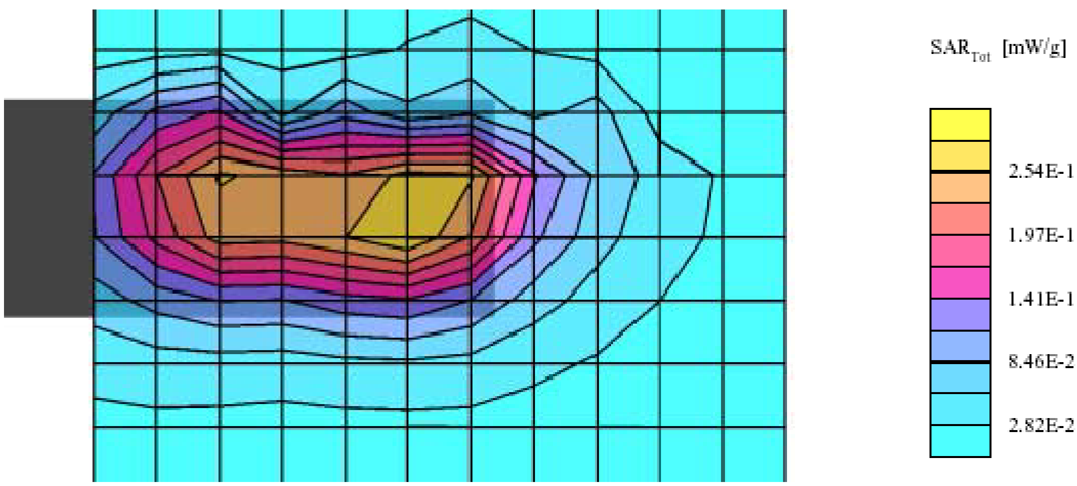
SAM Phantom; Righ Hand Section; Position: (90°,120°); Frequency: 837 MHz
Probe: ET3DV6 - SN1604; ConvF(6.45,6.45,6.45); Crest factor: 8.0; Head Liquid 835 MHz: σ = 0.88 mho/m ε_r = 41.7 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.242 mW/g, SAR (10g): 0.151 mW/g, (Worst-case extrapolation)
Coarse: Dx = 12.0, Dy = 12.0, Dz = 10.0
Powerdrift: -0.03 dB



Plot #5

PegasusTelecom, Model: Z360 (1.5 cm separation to flat phantom with headset, Middle Channel, Ambient Temp = 23 Deg C, Liqiud Temp = 22 Deg C, 12/8/2004)

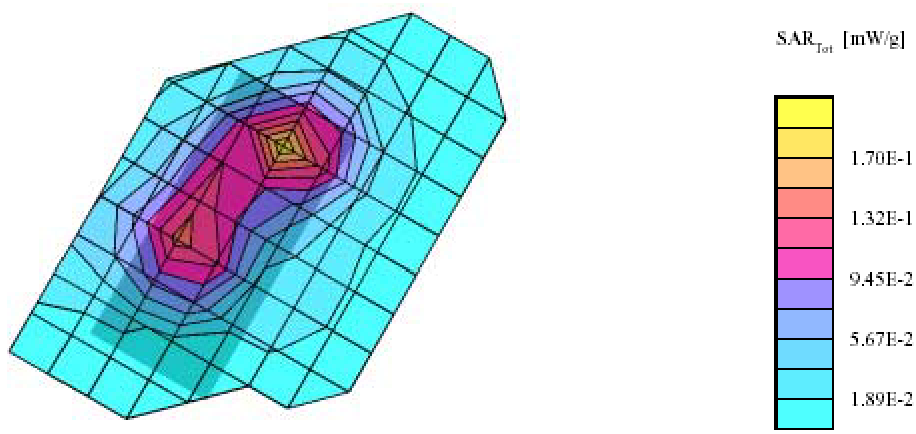
SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 1880 MHz
Probe: ET3DV2 - SN3019; ConvF(4.60,4.60,4.60); Crest factor: 8.0; Body Liquid 1900 MHz: σ = 1.50 mho/m ε_r = 53.4 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.273 mW/g, SAR (10g): 0.160 mW/g, (Worst-case extrapolation)
Coarse: Dx = 13.0, Dy = 13.0, Dz = 10.0
Powerdrift: -0.00 dB



Plot #6

PegasusTelecom, Model: Z360 (Left Head, Tilted, Middle Channel, Ambient Temp = 23 Deg C, Liqiud Temp = 22 Deg C, 12/8/2004)

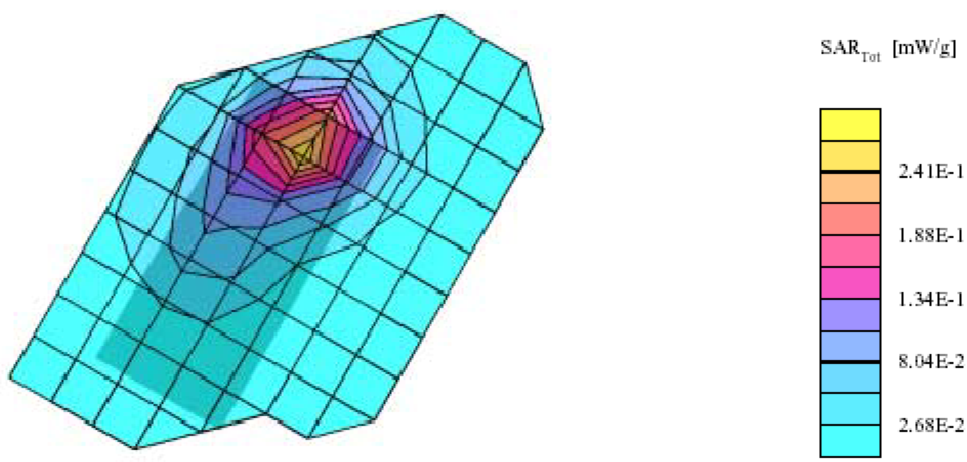
SAM Phantom; Left Hand Section; Position: (90°,60°); Frequency: 1880 MHz
Probe: ET3DV6 - SN1604; ConvF(5.23,5.23,5.23); Crest factor: 8.0; (Head) 1900 MHz: σ = 1.41 mho/m ε_r = 39.2 ρ = 1.31 g/cm³
Cube 5x5x7: SAR (1g): 0.202 mW/g, SAR (10g): 0.112 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: 0.02 dB



Plot #7

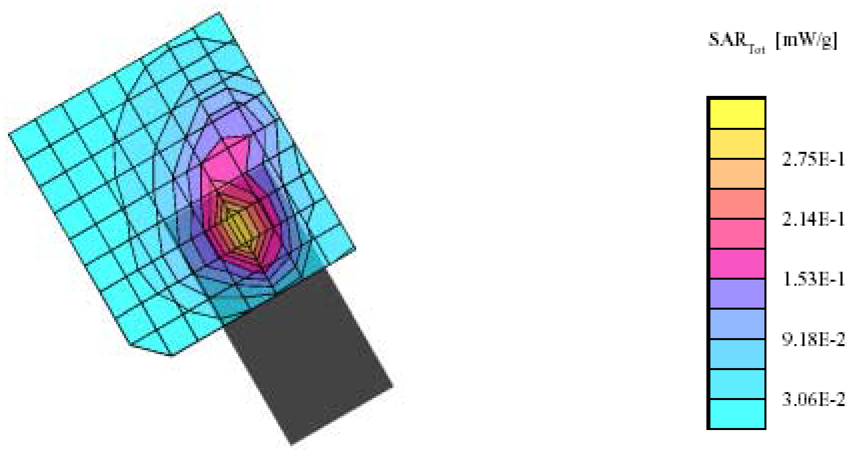
PegasusTelecom, Model: Z360 (Left Head, Cheek, Middle Channel, Ambient Temp = 23 Deg C, Liqiud Temp = 22 Deg C, 12/8/2004)

SAM Phantom; Left Hand Section; Position: (90°,60°); Frequency: 1880 MHz
Probe: ET3DV6 - SN1604; ConvF(5.23,5.23,5.23); Crest factor: 8.0; (Head) 1900 MHz: σ = 1.41 mho/m ε_r = 39.2 ρ = 1.31 g/cm^3
Cube 5x5x7: SAR (1g): 0.280 mW/g, SAR (10g): 0.154 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: -0.02 dB



Plot #8

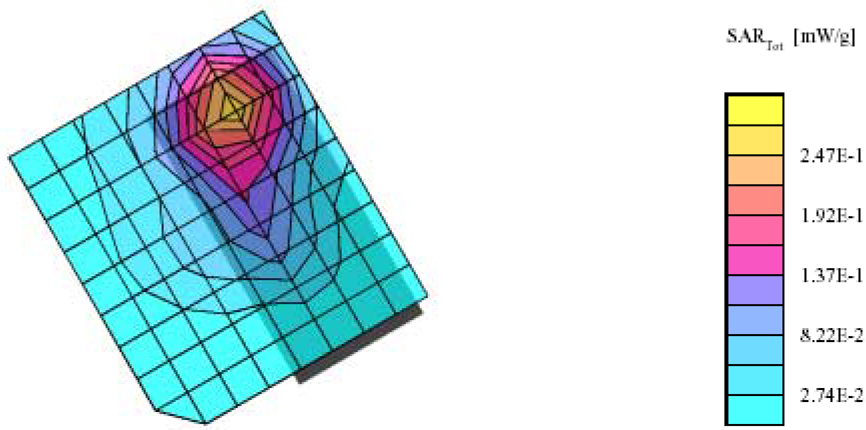
PegasusTelecom, Model: Z360 (Right Head, Cheek, Middle Channel, Ambient Temp = 23 Deg C, Liqiud Temp = 22 Deg C, 12/8/2004)
SAM Phantom; Righ Hand Section; Position: (90°,300°); Frequency: 1880 MHz
Probe: ET3DV6 - SN1604; ConvF(5.23,5.23,5.23); Crest factor: 8.0; (Head) 1900 MHz: σ = 1.41 mho/m ε_r = 39.2 ρ = 1.31 g/cm³
Cube 5x5x7: SAR (1g): 0.299 mW/g, SAR (10g): 0.167 mW/g, (Worst-case extrapolation)
Coarse: Dx = 12.0, Dy = 12.0, Dz = 10.0
Powerdrift: 0.01 dB



Plot #9

PegasusTelecom, Model: Z360 (Right Head, Tilted, Middle Channel, Ambient Temp = 23 Deg C, Liqiud Temp = 22 Deg C, 12/8/2004)

SAM Phantom; Righ Hand Section; Position: (90°,300°); Frequency: 1880 MHz
Probe: ET3DV6 - SN1604; ConvF(5.23,5.23,5.23); Crest factor: 8.0; (Head) 1900 MHz: σ = 1.41 mho/m ε_r = 39.2 ρ = 1.31 g/cm³
Cube 5x5x7: SAR (1g): 0.263 mW/g, SAR (10g): 0.148 mW/g, (Worst-case extrapolation)
Coarse: Dx = 12.0, Dy = 12.0, Dz = 10.0
Powerdrift: -0.02 dB



Plot #10

APPENDIX F – CONDUCTED OUTPUT POWER MEASUREMENT

Provision Applicable

According to FCC §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts. According to FCC § 24.232(b), EIRP peak power for mobile/portable stations are limited to 2 watts.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

Test equipment

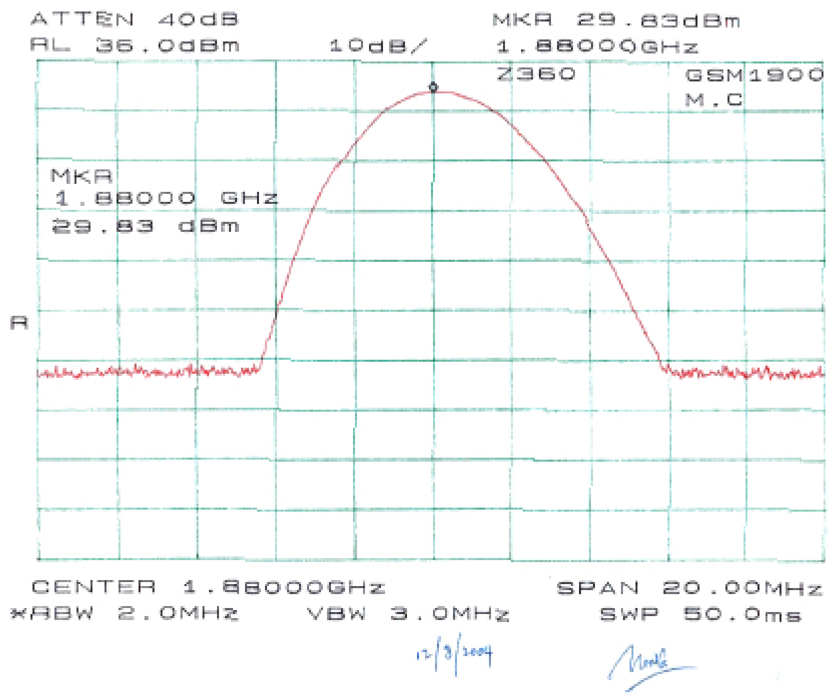
Hewlett Packard HP8564E Spectrum Analyzer, Calibration Due Date: 2005-08-01.
Hewlett Packard HP 7470A Plotter, Calibration not required.
A.H. Systems SAS200 Horn Antenna, Calibration Due Date: 2005-05-31
Com-Power AB-100 Dipole Antenna, Calibration Due Date: 2005-09-05

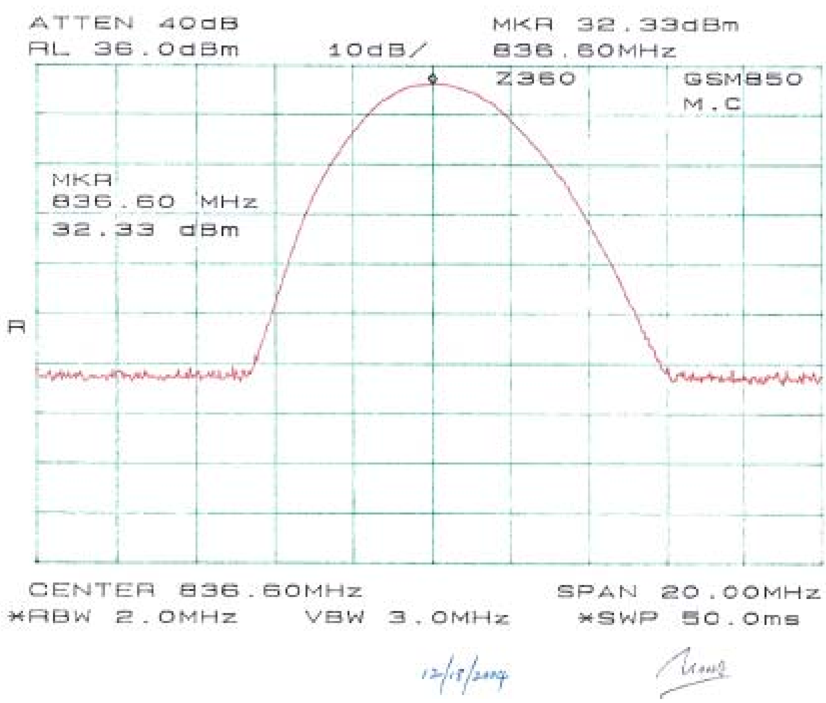
Test Results

GMS:

Frequency (MHz)	Output Power in dBm	Output Power in W	Limit (W)
836.60	32.33	1.710	7
1880.00	29.83	0.962	2

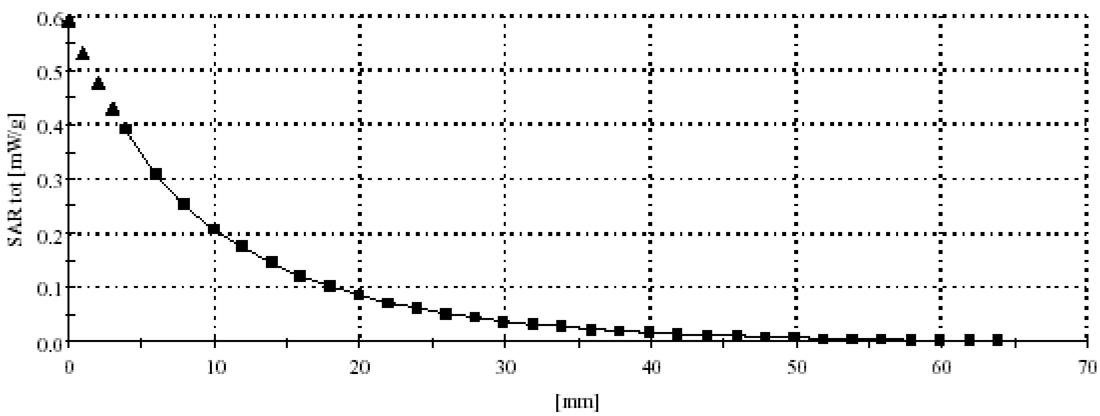
Please refer to the following plots.


ATTEN 40dB
RL 36.0dBm
10dB/
MKR 29.83dBm
1.88000GHz
Z360
GSM1900
M.C
MKR
1.88000 GHz
29.83 dBm
R
CENTER 1.88000GHz
SPAN 20.00MHz
*RBW 2.0MHz
VBW 3.0MHz
SWP 50.0ms


ATTEN 40dB
RL 36.0dBm
10dB/
MKR 32.33dBm
836.60MHz
Z360
GSM850
M.C
MKR
836.60 MHz
32.33 dBm
R
CENTER 836.60MHz
SPAN 20.00MHz
*RBW 2.0MHz
VBW 3.0MHz
*SWP 50.0ms

APPENDIX G – Z-AXIS PLOT

Pegasus Telecom, Model #: Z360 (1.5 cm separation to flat phantom, Middle Channel, Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, Middle Channel, 12/18/2004)
SAM Phantom; Section; Position: ; Frequency: 837 MHz
Probe: ES3DV2 - SN3019; ConvF(6.10,6.10,6.10); Crest factor: 8.0; 850 MHZ Body : σ = 0.93 mho/m ε_r = 55.4 ρ = 1.00 g/cm^3
: , 0
Z-Axis: Dx = 0.0, Dy = 0.0, Dz = 2.0



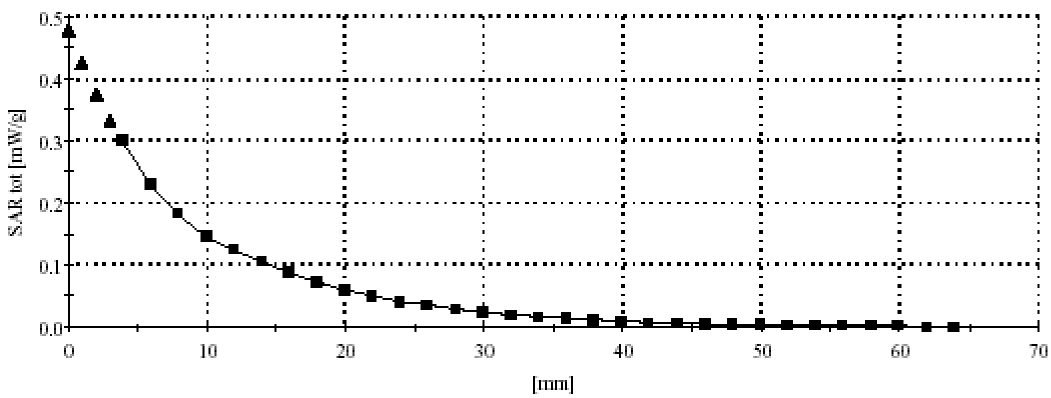
PegasusTelecom, Model: Z360 (1.5 cm separation to flat phantom with headset, Middle Channel, Ambient Temp = 23 Deg C, Liqiud Temp = 22 Deg C, 12/8/2004)

SAM Phantom; Section; Position: ; Frequency: 1880 MHz

Probe: ET3DV2 - SN3019; ConvF(4.60,4.60,4.60); Crest factor: 8.0; Body Liquid 1900 MHz: σ = 1.50 mho/m ε_r = 53.4 ρ = 1.00 g/cm³

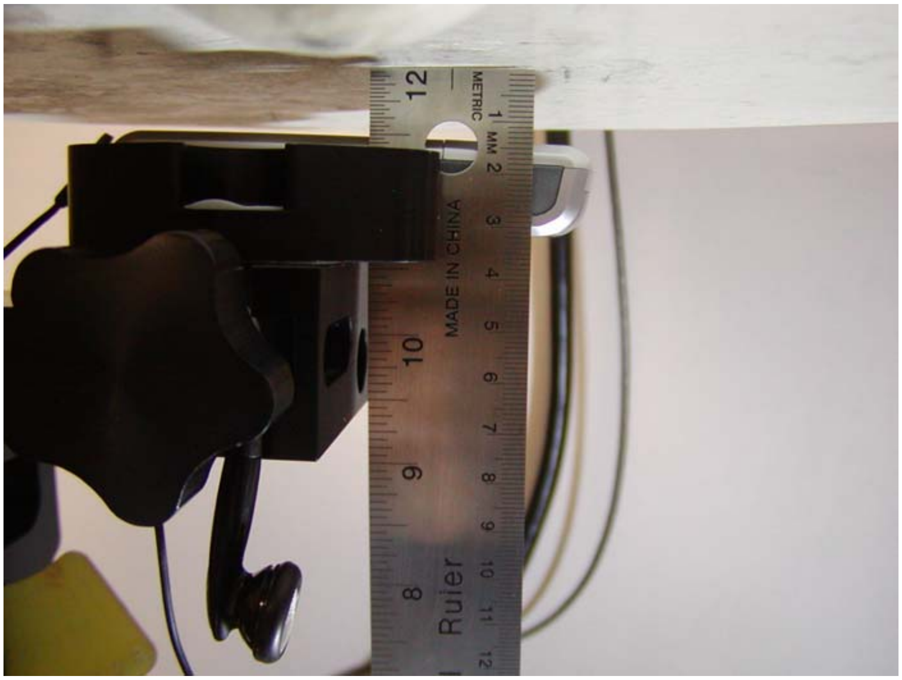
: , 0

Z-Axis: Dx = 0.0, Dy = 0.0, Dz = 2.0

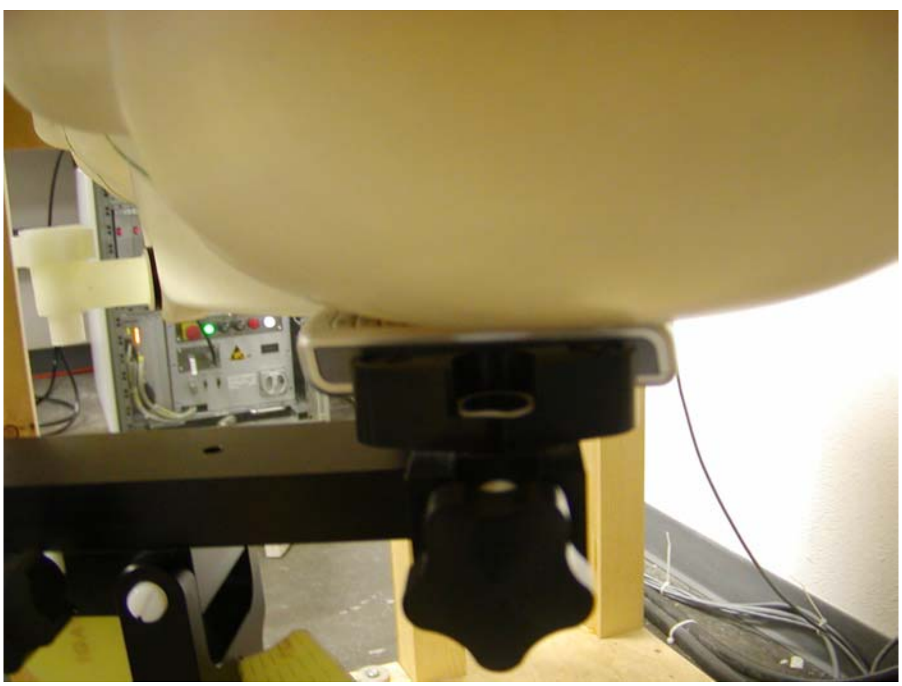


APPENDIX H – EUT TEST POSITION PHOTOS

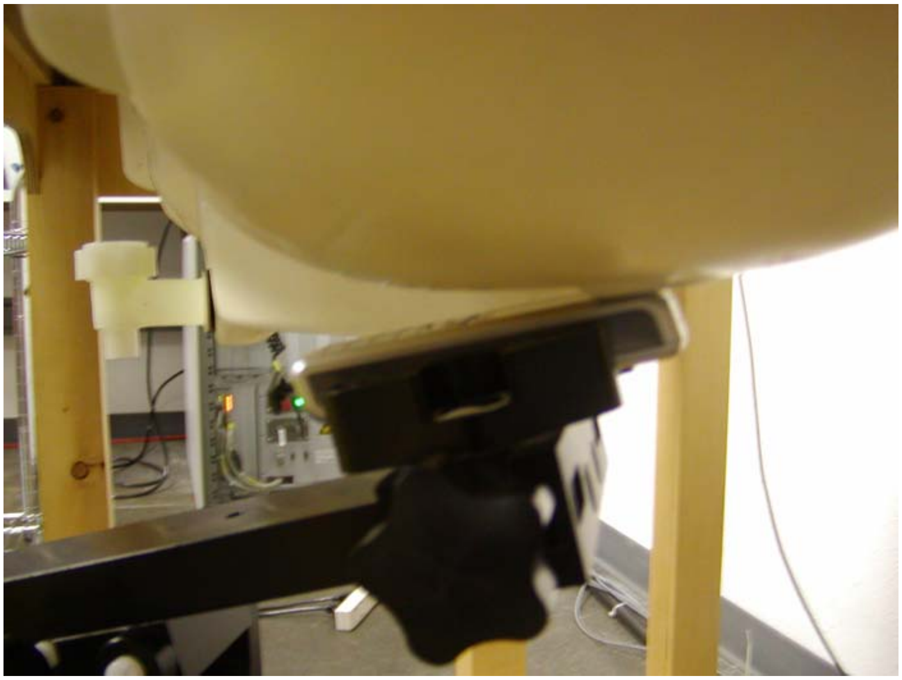
1.5 Separation to Flat Phantom with Headset



Left Head, Cheek

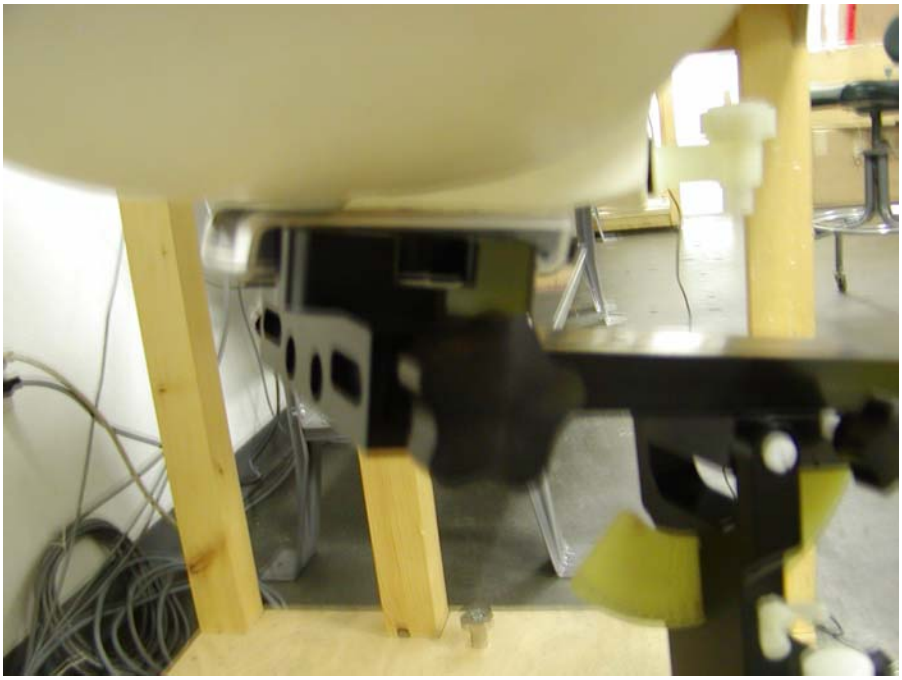


Left Head, Tilted



Right Head, Cheek

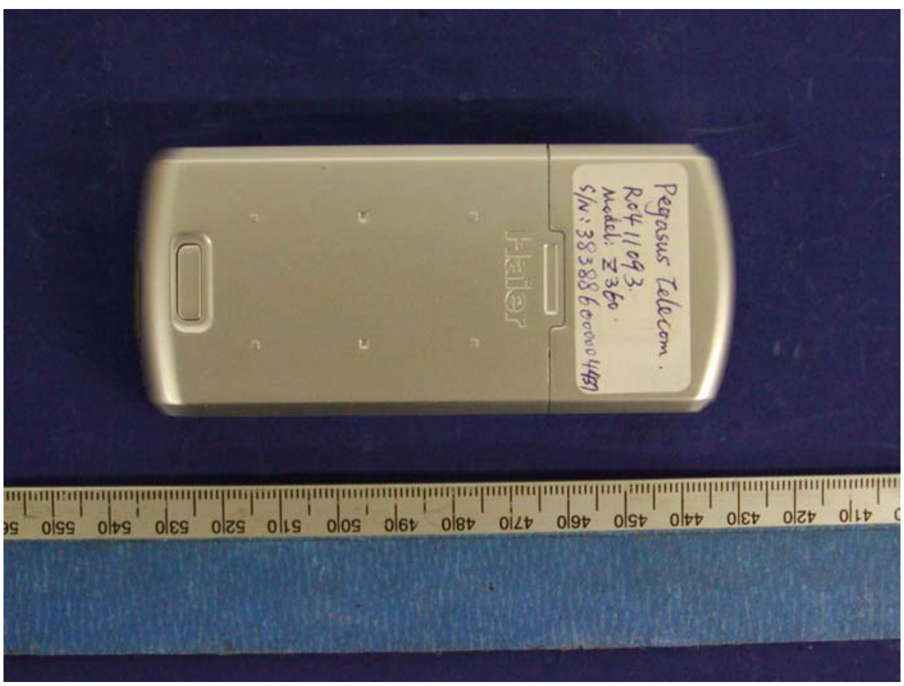
Right Head, Tilted



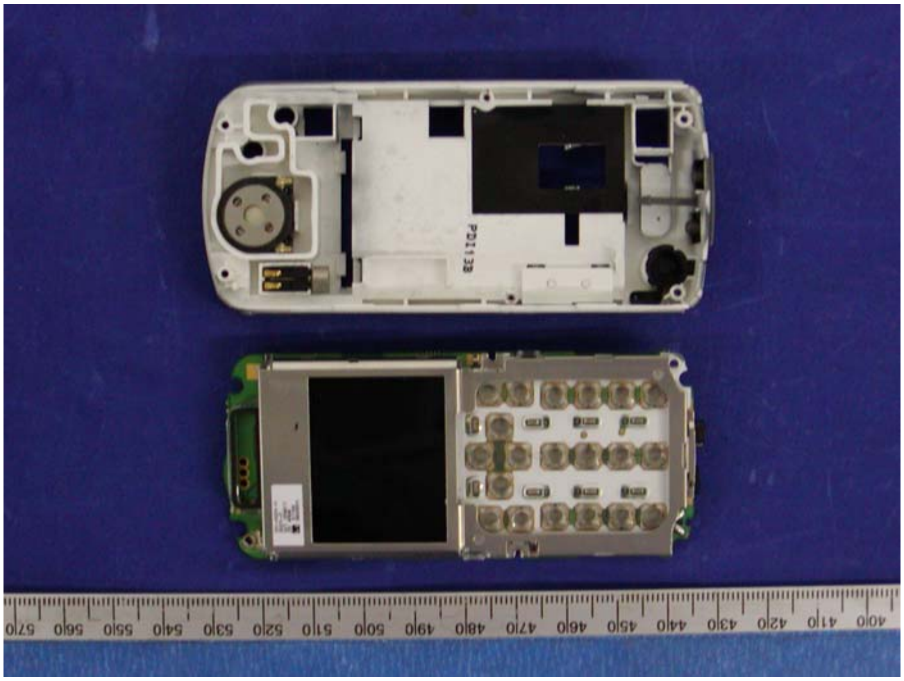
APPENDIX I – EUT & ACCESSORIES PHOTOS

EUT Front View

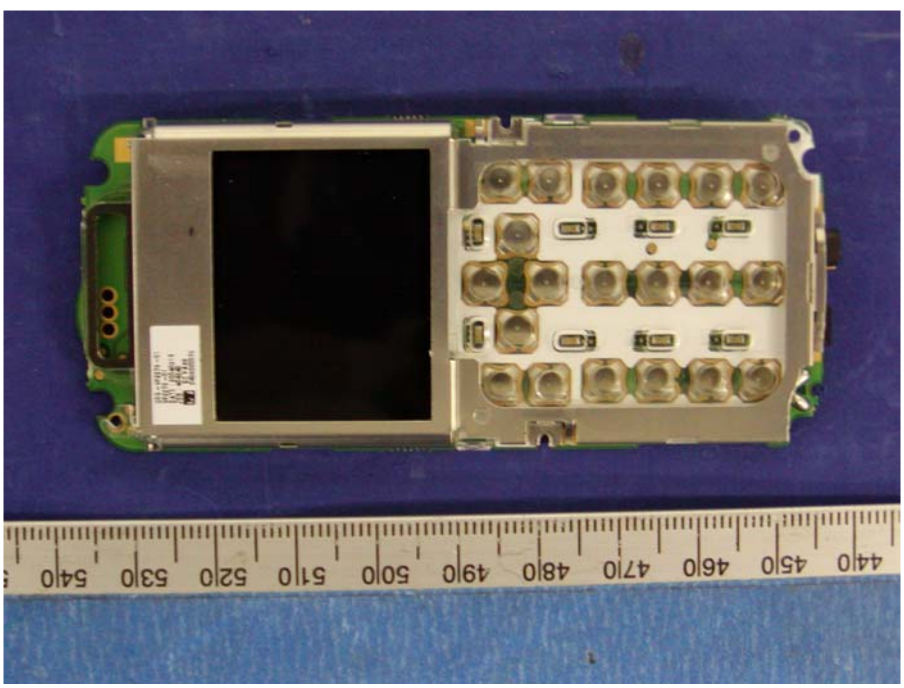
EUT Rear View



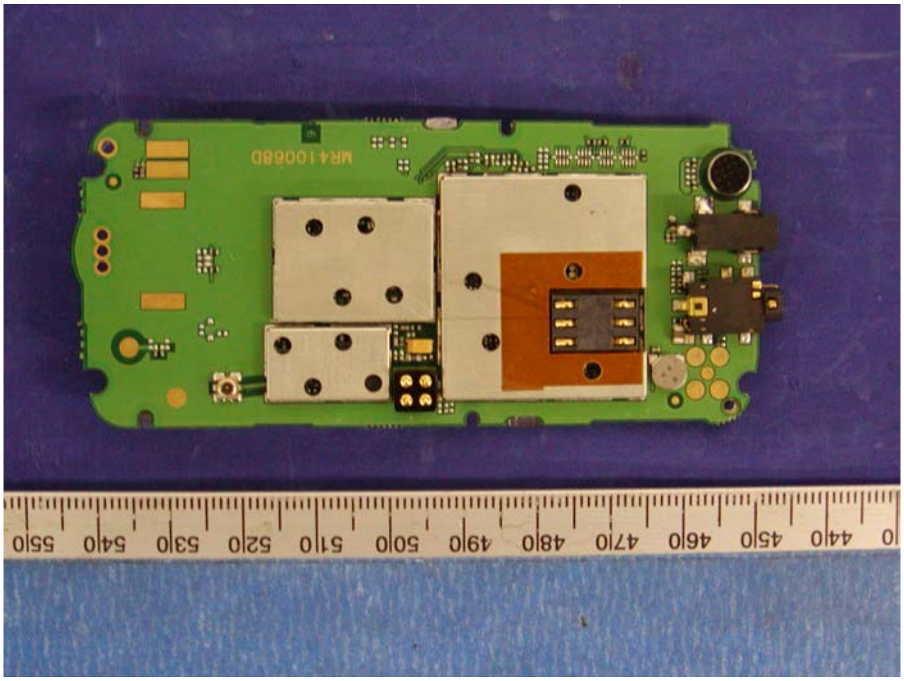
Board and Housing View



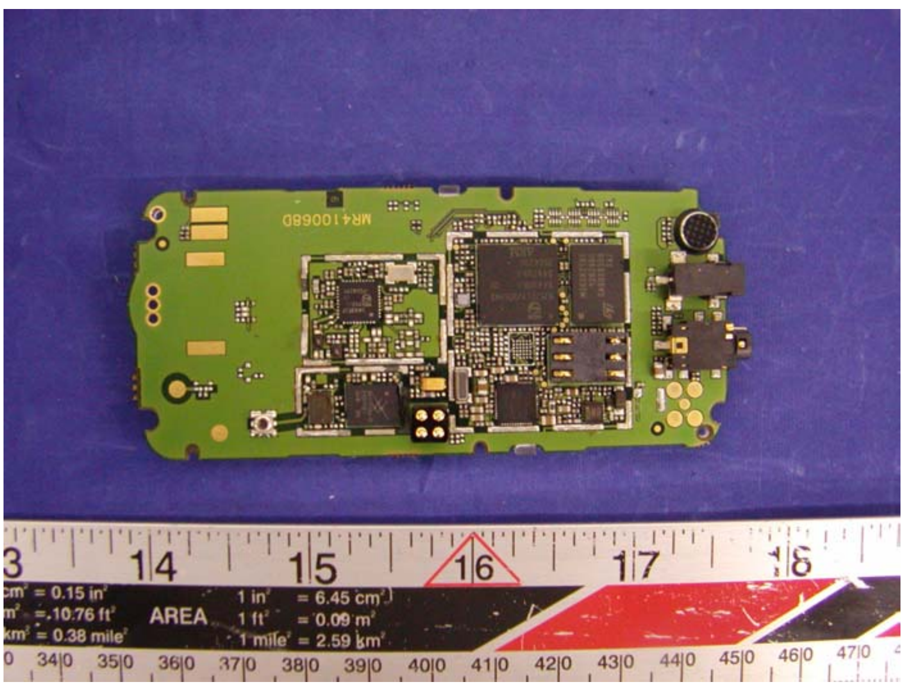
Board Top View



Board Bottom View



Board Bottom Cover Removed View



Headset View

APPENDIX J - INFORMATIVE REFERENCES

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