7.2 Exposure Limits

Table 1: Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands. Wrists. Feet and Ankles
0.4	8.0	20.0

Table 2: Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands. Wrists. Feet and Ankles
0.08	1.6	4.0

Note: Whole-body SAR is averaged over the entire body, partial-body SAR is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube SAR for hands, writs, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

Population/Uncontrolled Environments are defined as locations where there is the exposure of individual who have no knowledge or control of their exposure.

Occupational/Controlled Environments are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).

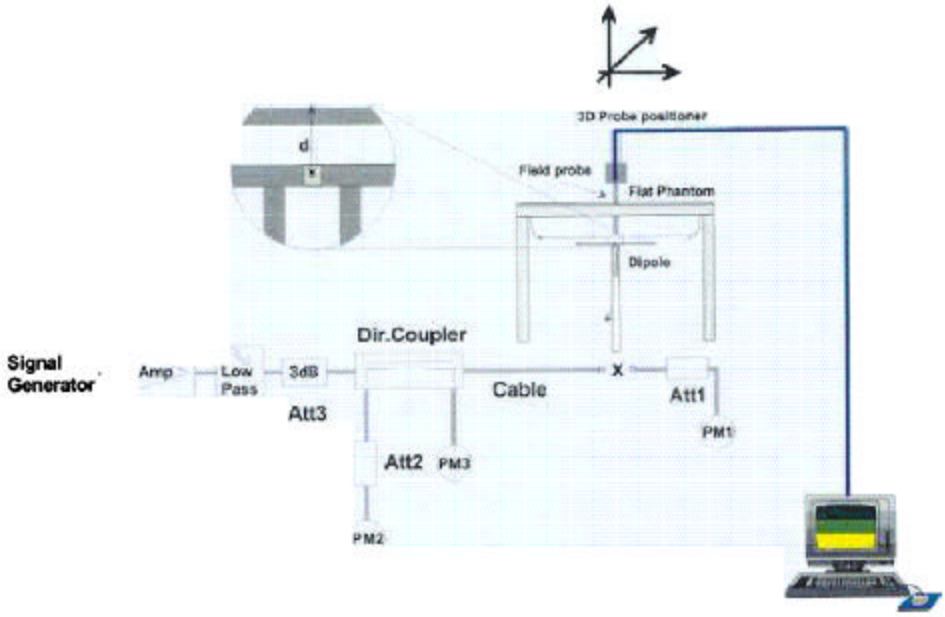
Population/uncontrolled environments Partial-body limit 1.6W/kg applied to the EUT.

7.3 Simulated Tissue Liquid Parameter Confirmation

The dielectric parameters were checked prior to assessment using the HP85070A dielectric probe kit. The dielectric parameters measured are reported in each correspondent section:

7.4 SAR Measurement

The SAR measurement was performed with the E-field probe in mechanical detection mode only. The setup and determination of the forward power into the dipole was performed using the following procedures.



First, the power meter PM1 (including attenuator Att1) is connected to the cable to measure the forward power at the location of the dipole connector (X). The signal generator is adjusted for the desired forward power at he dipole connector (taking into account the attenuation of Att1) as read by power meter PM2. after connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter PM2. If the signal generator does not allow adjustment in 0.01dB steps, the remaining difference at PM 2 must be taken into consideration. PM3 records the reflected power from the dipole to ensure that the value is not changed form the previous value. The reflected power should be 20dB below the forward power.

The SAR measurements were performed in order to achieve repeatability and to establish an average target value.

7.5 System Accuracy Verification

Prior to the assessment, the system validation kit was used to test whether the system was operating within its specifications of ±10%. The validation results are tabulated below. And also the corresponding SAR plot is attached as well in the SAR plots files.

IEEE P1528 recommended reference value for head

Frequency (MHz)	1 g SAR	10 g SAR	Local SAR at surface (above feed point)	Local SAR at surface (v=2cm offset from feed point)
300	3.0	2.0	4.4	2.1
450	4.9	3.3	7.2	3.2
835	9.5	6.2	14.1	4.9
900	10.8	6.9	16.4	5.4
1450	29.0	16.0	50.2	6.5
1800	38.1	19.8	69.5	6.8
1900	39.7	20.5	72.1	6.6
2000	41.1	21.1	74.6	6.5
2450	52.4	24.0	104.2	7.7
3000	63.8	25.7	140.2	9.5

Validation Dipole SAR Reference Test Result for Body (835 MHz)

Validation Measurement	SAR @ 0.025W Input averaged over 1g	SAR @ 1W Input averaged over 1g	SAR @ 0.025W Input averaged over 10g	SAR @ 1W Input averaged over 10g
Test 1	0.222	8.88	0.112	4.48
Test 2	0.221	8.84	0.111	4.44
Test 3	0.222	8.88	0.112	4.48
Test 4	0.220	8.80	0.111	4.44
Test 5	0.223	8.92	0.113	4.52
Test 6	0.222	8.88	0.115	4.60
Test 7	0.221	8.84	0.114	4.56
Test 8	0.222	8.88	0.114	4.56
Test 9	0.223	8.92	0.113	4.52
Test 10	0.222	8.88	0.112	4.48
Average	0.2218	8.872	0.1127	4.51

Validation Dipole SAR Reference Test Result for Body (1900 MHz)

Validation Measurement	SAR @ 0.126W Input averaged over 1g	SAR @ 1W Input averaged over 1g	SAR @ 0.126W Input averaged over 10g	SAR @ 1W Input averaged over 10g
Test 1	3.1	24.61	1.42	11.27
Test 2	3.1	24.61	1.41	11.20
Test 3	3.2	25.41	1.43	11.35
Test 4	3.2	25.41	1.42	11.27
Test 5	3.1	24.61	1.42	11.27
Test 6	3.2	25.61	1.41	11.20
Test 7	3.2	25.61	1.43	11.35
Test 8	3.1	24.61	1.42	11.27
Test 9	3.1	24.61	1.42	11.27
Test 10	3.1	24.61	1.43	11.35
Average	3.14	24.97	1.421	11.28

7.6 Liquid Measurement Result

2004-08-12

Simulant	Freq [MHz]	Parameters	Liquid Temp [ºC]	Target Value	Measured Value	Deviation	Limits [%]
Body	835	ε_r	22.0	55.2	52.9	-4.17	±5
		σ	22.0	0.97	0.99	2.06	±5
		1g SAR	22.0	8.872	9.18	3.47	±10
Head	835	ε_r	22.0	41.5	41.0	-1.20	±5
		σ	22.0	0.90	0.90	0	±5
		1g SAR	22.0	9.5	10.26	8	±10

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

Liquid Forward Power for body = 20.9 dBm = 123.03 mW
Liquid Forward Power for head = 20.1 dBm = 102.33 mW

2004-08-12

Simulant	Freq [MHz]	Parameters	Liquid Temp [ºC]	Target Value	Measured Value	Deviation	Limits [%]
Body	1900	ε_r	22.0	53.3	52.8	-0.94	±5
		σ	22.0	1.52	1.57	3.29	±5
		1g SAR	22.0	24.97	26.81	7.37	±10
Head	1900	ε_r	22.0	40.0	40.0	0	±5
		σ	22.0	1.40	1.40	0	±5
		1g SAR	22.0	39.7	37.25	-6.16	±10

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

Liquid Forward Power for body = 20.4 dBm = 109.65 mW
Liquid Forward Power for head = 21.0 dBm = 125.89 mW

System Validation 835 MHz Body liquid (Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, Forward Power = 20.9 dBm, 8/12/04)

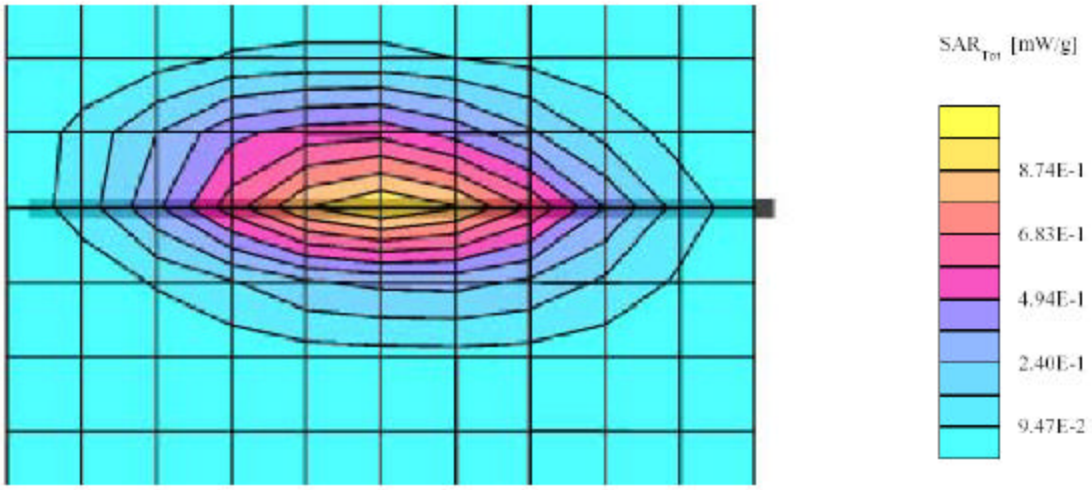
SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 835 MHz

Probe: ES3DV2 - SN3019; ConvF(6.10,6.10,6.10); Crest factor: 1.0; 835 (Body) MHz: σ = 0.99 mho/m ε_r = 52.9 ρ = 1.00 g/cm^3

Cube 5x5x7: SAR (1g): 1.13 mW/g, SAR (10g): 0.609 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, 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 = 20.1 dBm, 8/12/04)

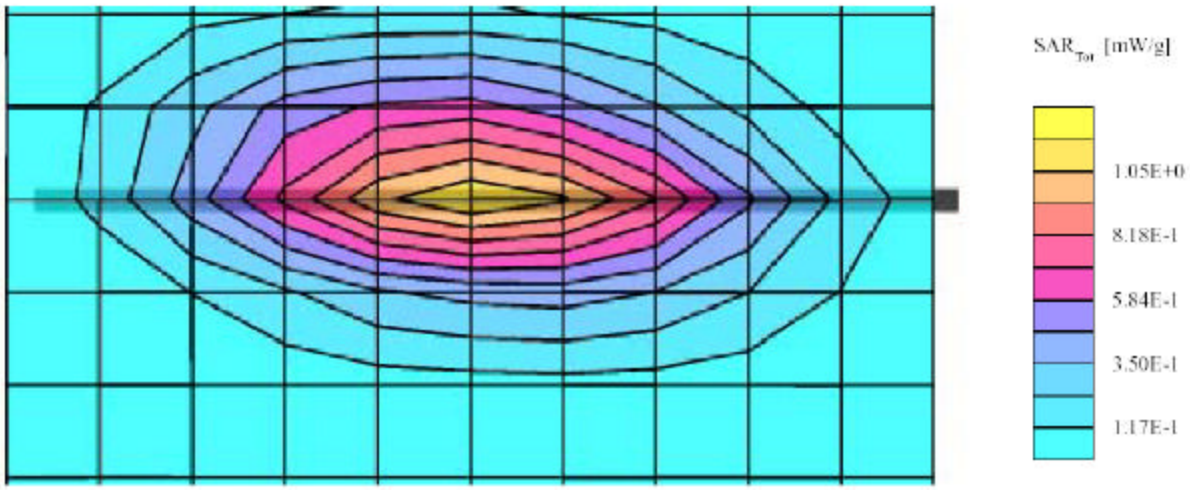
SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 835 MHz

Probe: ES3DV2 - SN3019; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 835 (Head) MHz: σ = 0.90 mho/m ε_r = 41.0 ρ = 1.00 g/cm^3

Cube 5x5x7: SAR (1g): 1.05 mW/g, SAR (10g): 0.611 mW/g, (Worst-case extrapolation)

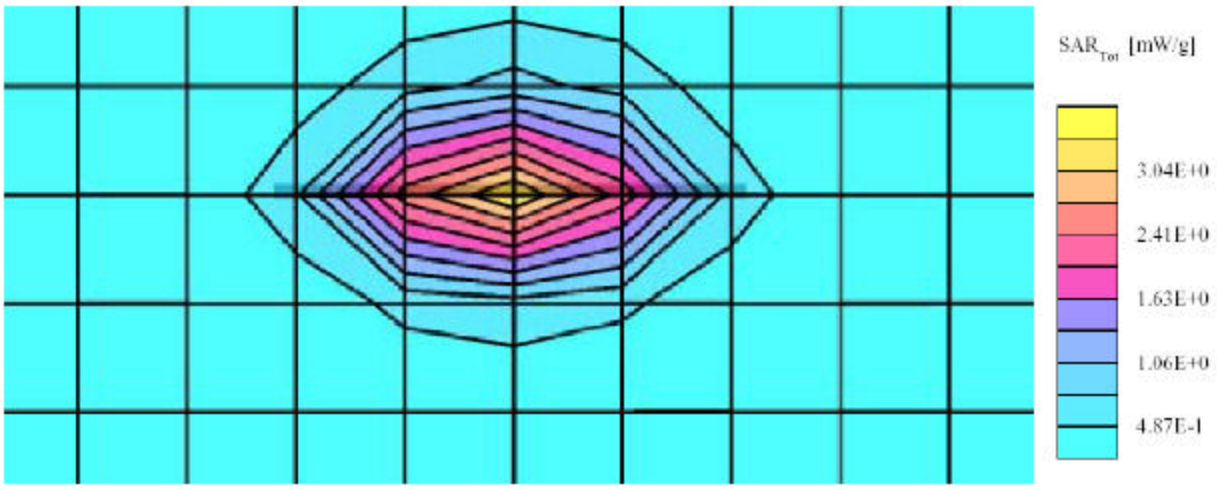
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Powerdrift: -0.05 dB



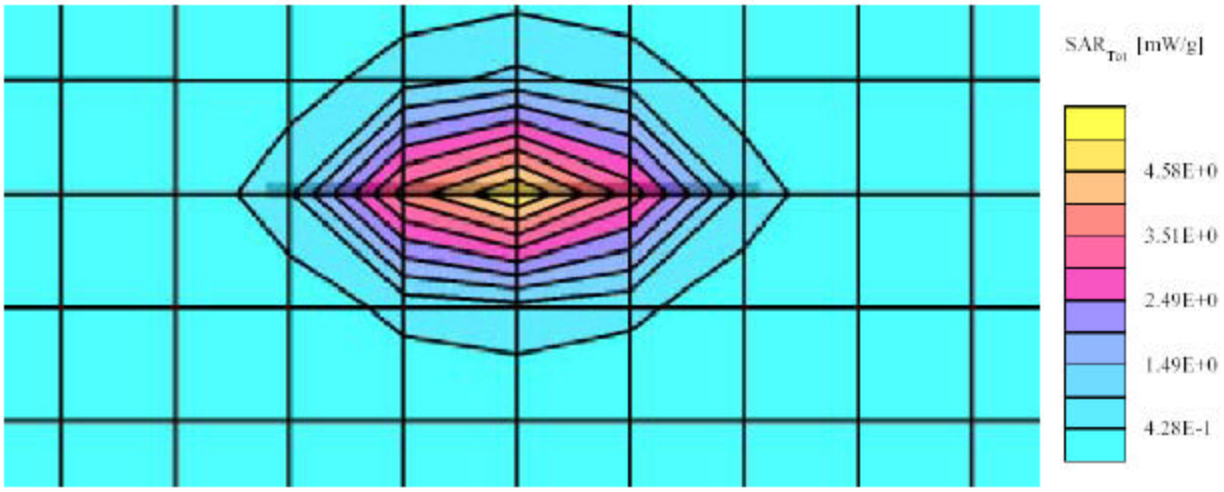
1900 MHz Body Liquid System Validation (Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, Forwar Power = 20.4 dBm, 8/12/2004)

SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 1900 MHz
Probe: ES3DV2 - SN3019; ConvF(4.60,4.60,4.60); Crest factor: 1.0; Body 1900 MHz: σ = 1.57 mho/m ε_r = 52.8 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 2.94 mW/g, SAR (10g): 1.17 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: 0.00 dB



1900 MHz Head Liquid System Validation (Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, Forwar Power = 21.0 dBm, 8/12/2004)

SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 1900 MHz
Probe: ES3DV2 - SN3019; ConvF(4.70,4.70,4.70); Crest factor: 1.0; Head 1900 MHz: σ = 1.40 mho/m ε_r = 40.0 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 4.69 mW/g, SAR (10g): 2.41 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: -0.02 dB



8 - SAR TEST RESULTS

This page summarizes the results of the performed dosimetric evaluation. The plots with the corresponding SAR distributions, which reveal information about the location of the maximum SAR with respect to the device could be found in the following pages.

8.1 SAR Body and Head Worst-Case Test Data

2004-08-12

Ambient Temperature (ºC): 23.0
Relative Humidity (%): 49

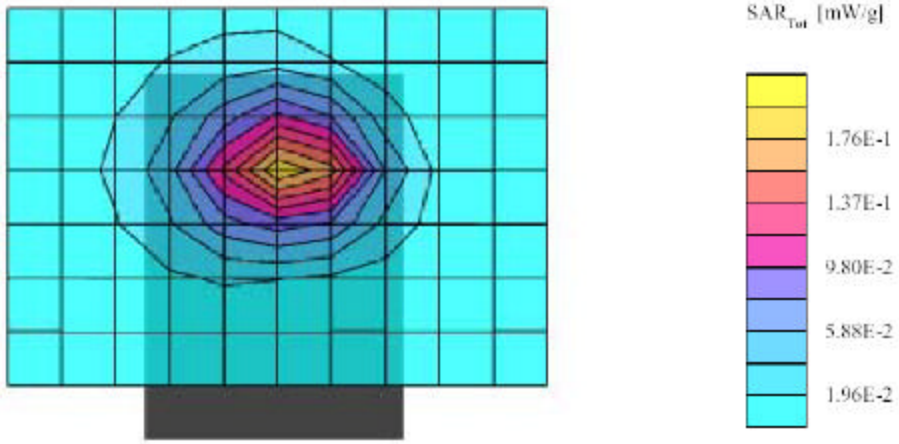
Position	Frequency (MHz)	Output Power (dBm)	Liquid	Phantom	Measured (mW/g)	Limit (mW/g)	Plot #
Top side of the DUT face toward and 1.5cm separation to flat phantom	836	33	Body	Flat	0.175	1.6	1
Back side of the DUT face toward and 1.5cm separation to flat phantom	836	33	Body	Flat	0.192	1.6	2
GPRS 850, Back side of the DUT face toward and 1.5cm separation to flat phantom	836	33	Body	Flat	0.669	1.6	3
GPRS 850, Top side of the DUT face toward and 1.5cm separation to flat phantom	836	33	Body	Flat	0.753	1.6	4
PCS 1900, Back side of the DUT face toward and 1.5cm separation to flat phantom	1880	29.83	Body	Flat	0.564	1.6	5
PCS 1900, Top side of the DUT face toward and 1.5cm separation to flat phantom	1880	29.83	Body	Flat	0.468	1.6	6
GPRS 1900, Back side of the DUT face toward and 1.5cm separation to flat phantom	1880	29.83	Body	Flat	0.0773	1.6	7
GPRS 1900, Top side of the DUT face toward and 1.5cm separation to flat phantom	1880	29.83	Body	Flat	0.122	1.6	8

8.2 Plots of Test Result

The plots of test result were attached as reference.

Verifone, Omni 56XXG (GSM850, Top Side of the DUT faced toward and 1.5 cm separation to flat phantom, Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, 8/12/04)

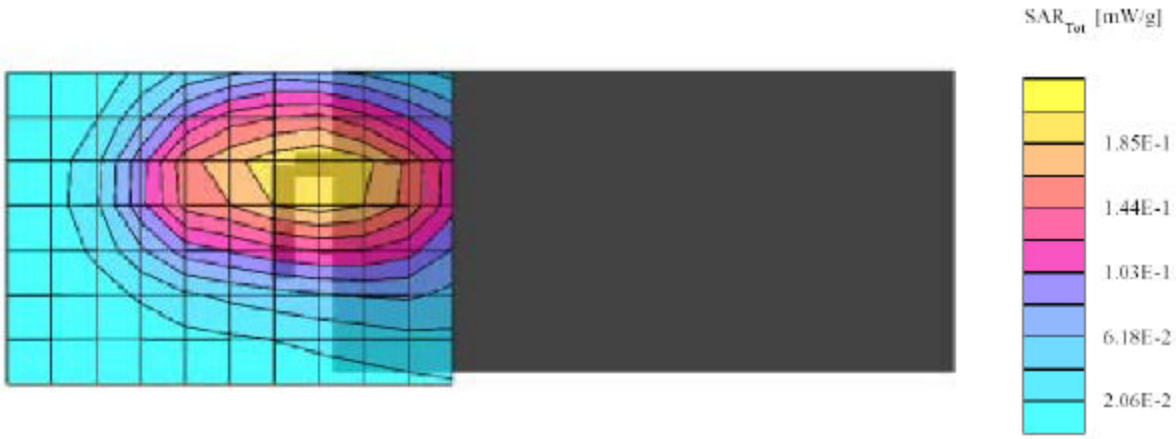
SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 836 MHz
Probe: ES3DV2 - SN3019; ConvF(6.10,6.10,6.10); Crest factor: 8.0; Body 835 MHz: σ = 0.99 mho/m ε_r = 52.9 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.175 mW/g, SAR (10g): 0.102 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: -0.01 dB



Plot #1

Verifone, Omni 56XXG (GSM 850, Back Side of the DUT faced toward and 1.5 cm separation to flat phantom, Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, 8/12/04)

SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 836 MHz
Probe: ES3DV2 - SN3019; ConvF(6.10,6.10,6.10); Crest factor: 8.0; Body 835 MHz: σ = 0.99 mho/m ε_r = 52.9 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.192 mW/g, SAR (10g): 0.135 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: 0.02 dB



Plot #2

Verifone, Omni 56XXG (GPRS 850, Back Side of the DUT faced toward and 1.5 cm separation to flat phantom, Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, 8/12/04)

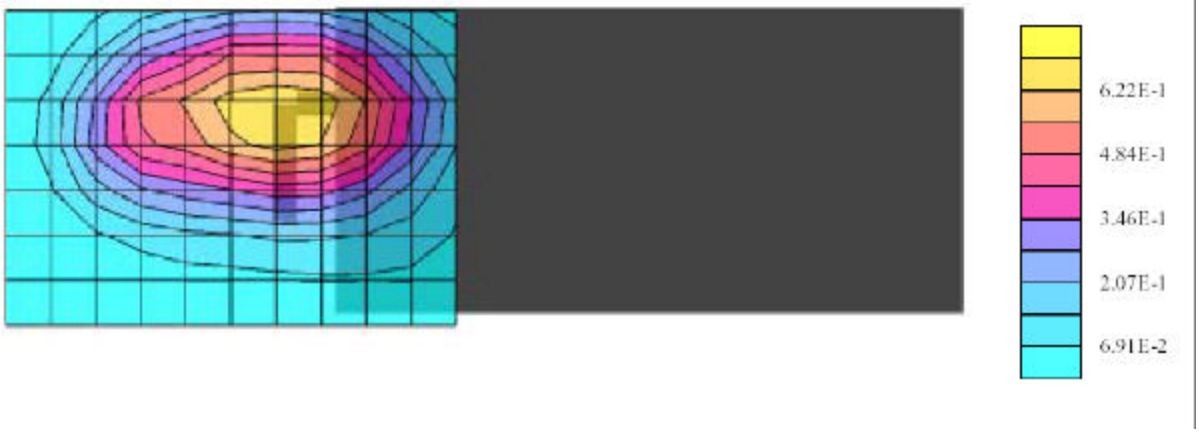
SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 836 MHz

Probe: ES3DV2 - SN3019; ConvF(6.10,6.10,6.10); Crest factor: 4.0; Body 835 MHz: σ = 0.99 mho/m ε_r = 52.9 ρ = 1.00 g/cm^3

Cube 5x5x7: SAR (1g): 0.669 mW/g, SAR (10g): 0.472 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

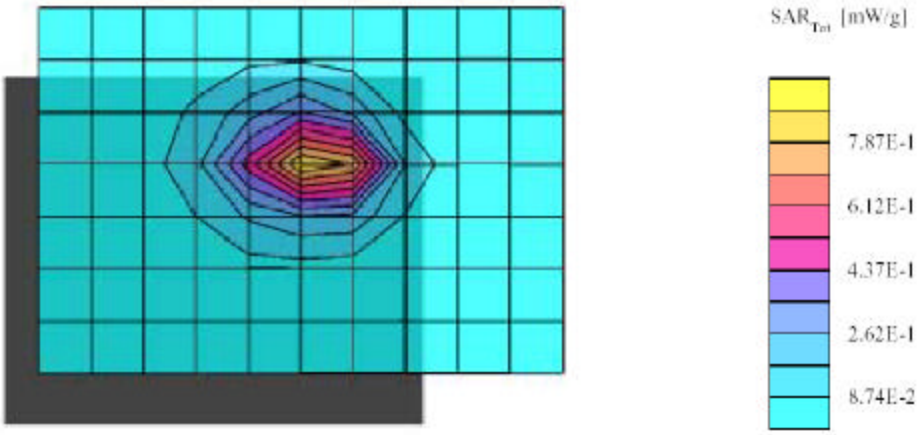
Powerdrift: -0.05 dB



Plot #3

Verifone, Omni 56XXG (GPRS 850, Top Side of the DUT faced toward and 1.5 cm separation to flat phantom, Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, 8/12/04)

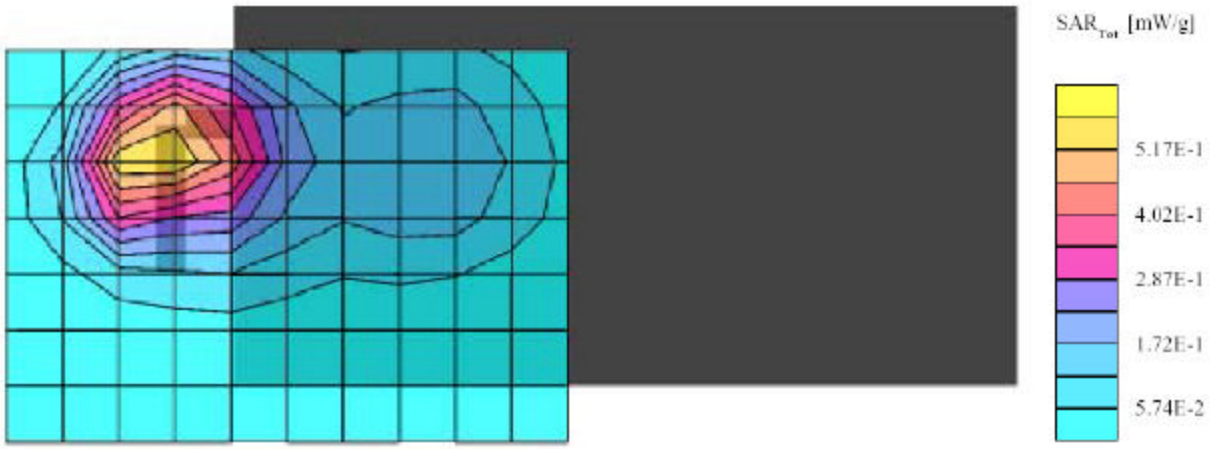
SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 836 MHz
Probe: ES3DV2 - SN3019; ConvF(6.10,6.10,6.10); Crest factor: 8.0; Body 835 MHz: $\sigma = 0.99$ mho/m $\varepsilon_r = 52.9$ $\rho = 1.00$ g/cm^3
Cube 5x5x7: SAR (1g): 0.753 mW/g, SAR (10g): 0.403 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: -0.04 dB



Plot #4

Verifone, Omni 56XXG (PCS 1900, Back Side of the DUT faced toward and 1.5 cm separation to flat phantom, Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, 8/12/04)

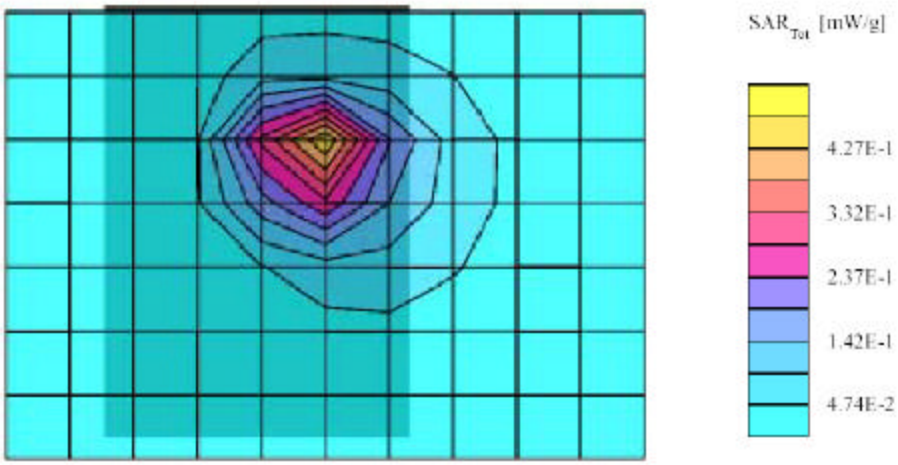
SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 1900 MHz
Probe: ES3DV2 - SN3019; ConvF(4.60,4.60,4.60); Crest factor: 1.0; Body 1900 MHz: σ = 1.57 mho/m ε_r = 52.8 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.564 mW/g, SAR (10g): 0.344 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: -0.01 dB



Plot #5

Verifone, Omni 56XXG (PCS 1900, Top Side of the DUT faced toward and 1.5 cm separation to flat phantom, Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, 8/12/04)

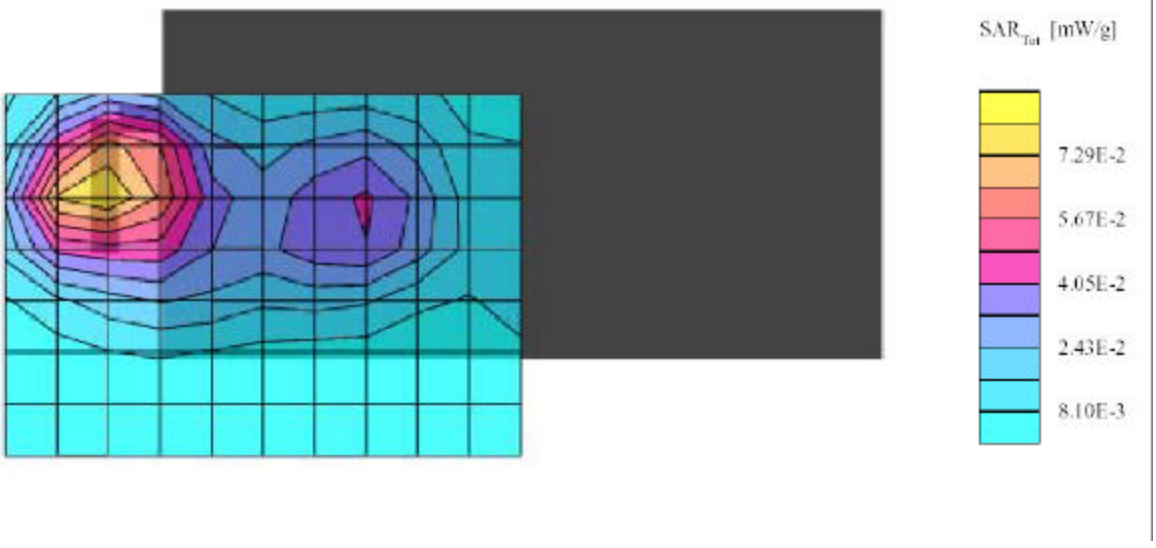
SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 1900 MHz
Probe: ES3DV2 - SN3019; ConvF(4.60,4.60,4.60); Crest factor: 1.0; Body 1900 MHz: σ = 1.57 mho/m ε_r = 52.8 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.468 mW/g, SAR (10g): 0.241 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: 0.02 dB



Plot #6

Verifone, Omni 56XXG (GPRS 1900, Back Side of the DUT faced toward and 1.5 cm separation to flat phantom, Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, 8/12/04)

SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 1900 MHz
Probe: ES3DV2 - SN3019; ConvF(4.60,4.60,4.60); Crest factor: 1.0; Body 1900 MHz: σ = 1.57 mho/m ε_r = 52.8 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.0773 mW/g, SAR (10g): 0.0472 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: 0.04 dB



Plot #7

Verifone, Omni 56XXG (GPRS 1900, Top Side of the DUT faced toward and 1.5 cm separation to flat phantom, Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, 8/12/04)

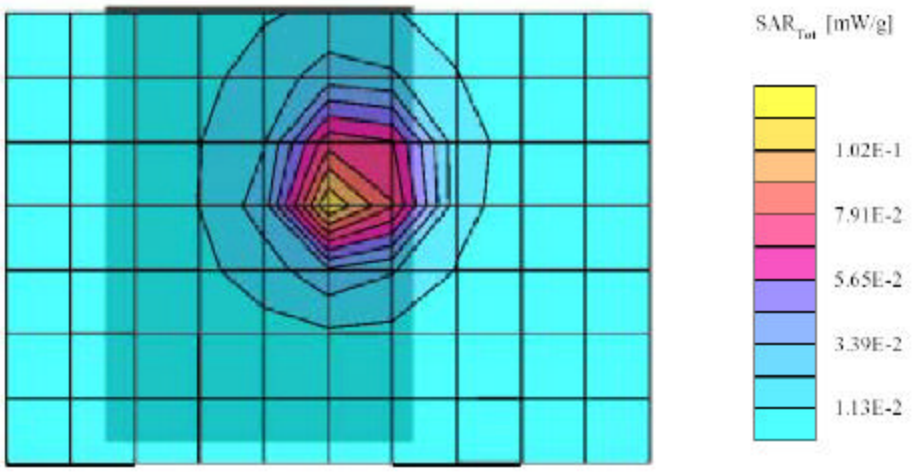
SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 1900 MHz

Probe: ES3DV2 - SN3019; ConvF(4.60,4.60,4.60); Crest factor: 1.0; Body 1900 MHz: σ = 1.57 mho/m ε_r = 52.8 ρ = 1.00 g/cm^3

Cube 5x5x7: SAR (1g): 0.122 mW/g, SAR (10g): 0.0623 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Powerdrift: 0.02 dB

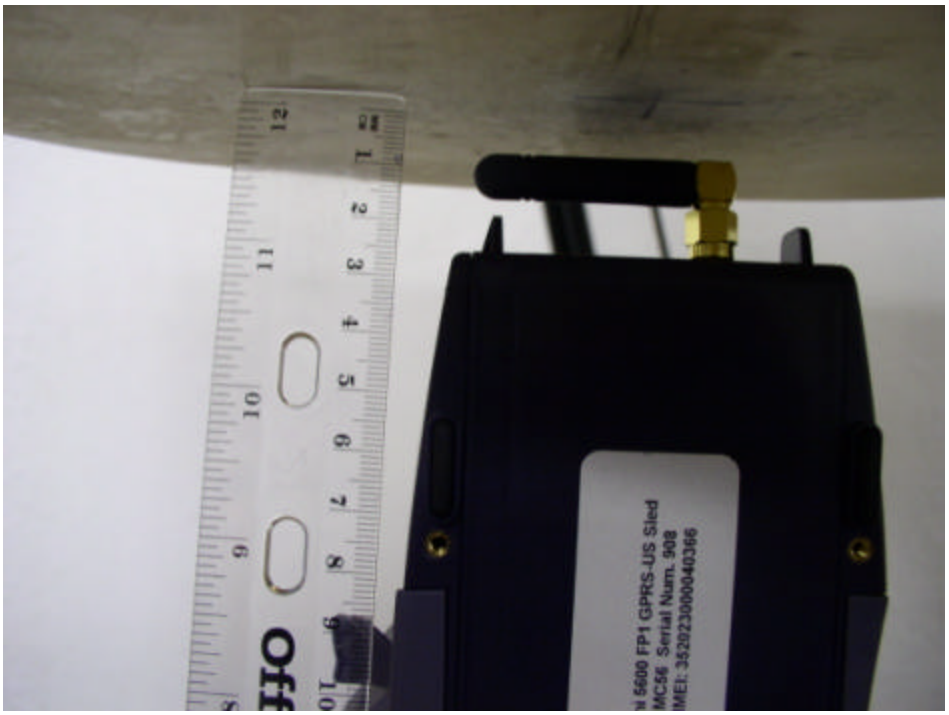


Plot #8

EXHIBIT A - SAR SETUP PHOTOGRAPHS

Top Side 1.5cm Separation to Flat Phantom View I

Top Side 1.5cm Separation to Flat Phantom View II



Back Side 1.5cm Separation to Flat Phantom

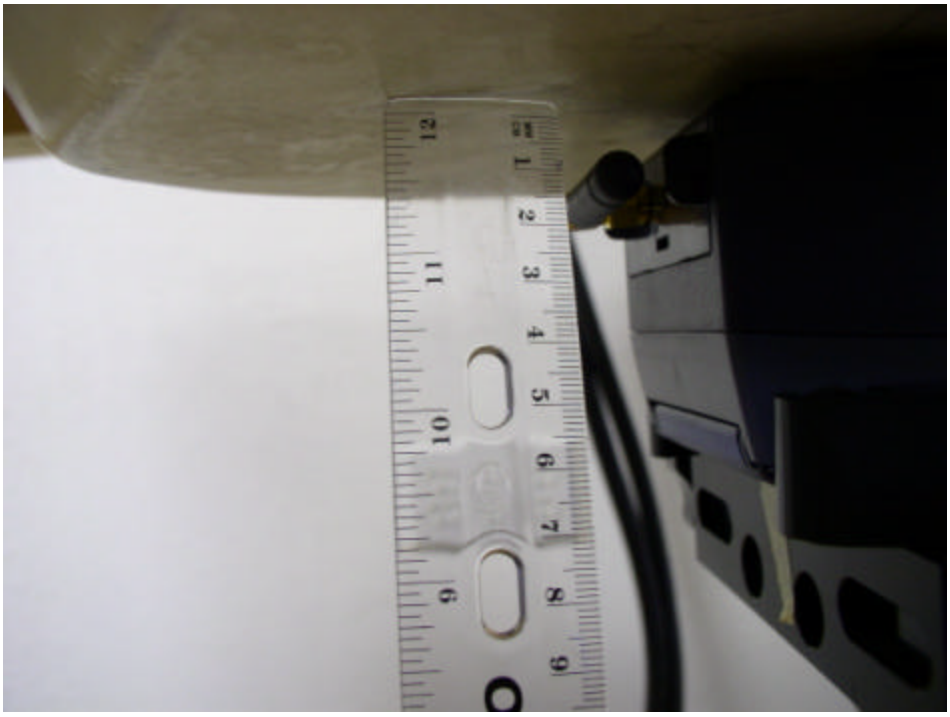
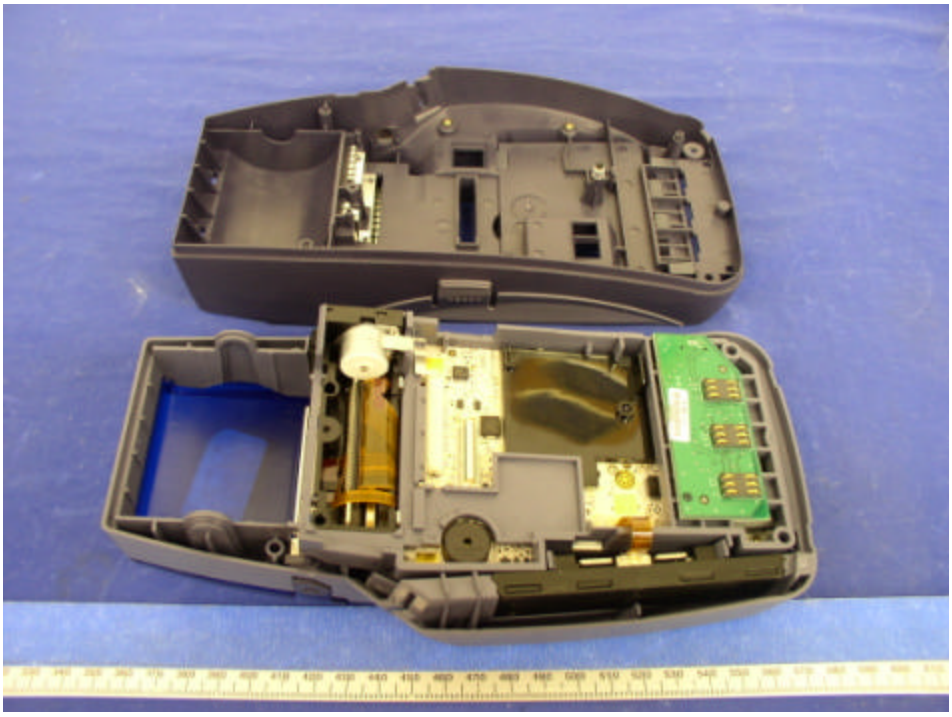


EXHIBIT B – EUT PHOTOGRAPHS

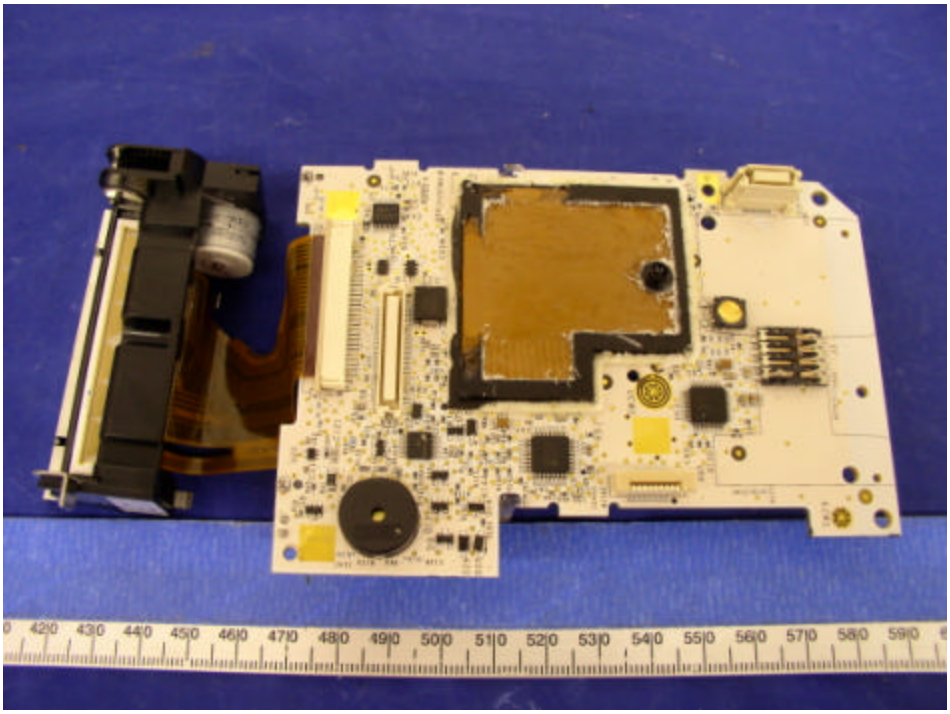
EUT Front View

EUT Rear View

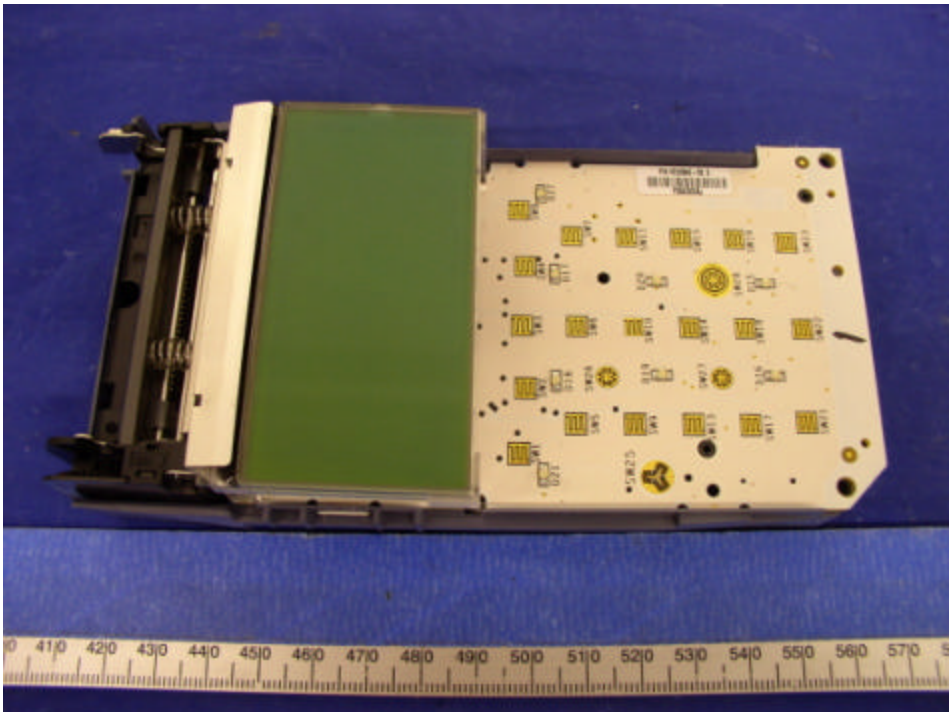
EUT Cover Off View



EUT Component View

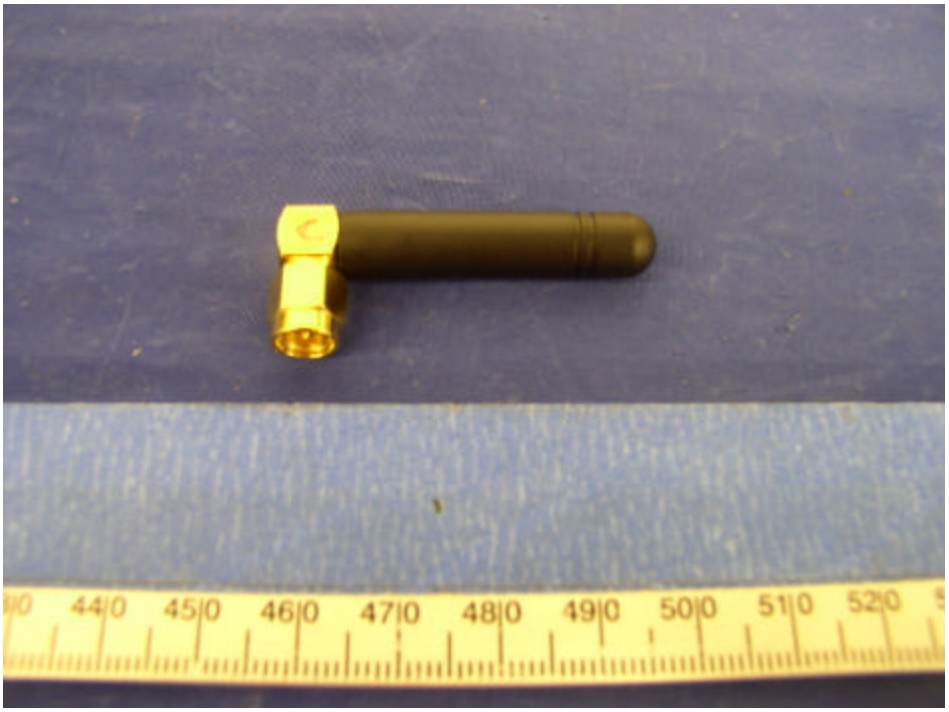


EUT Solder View

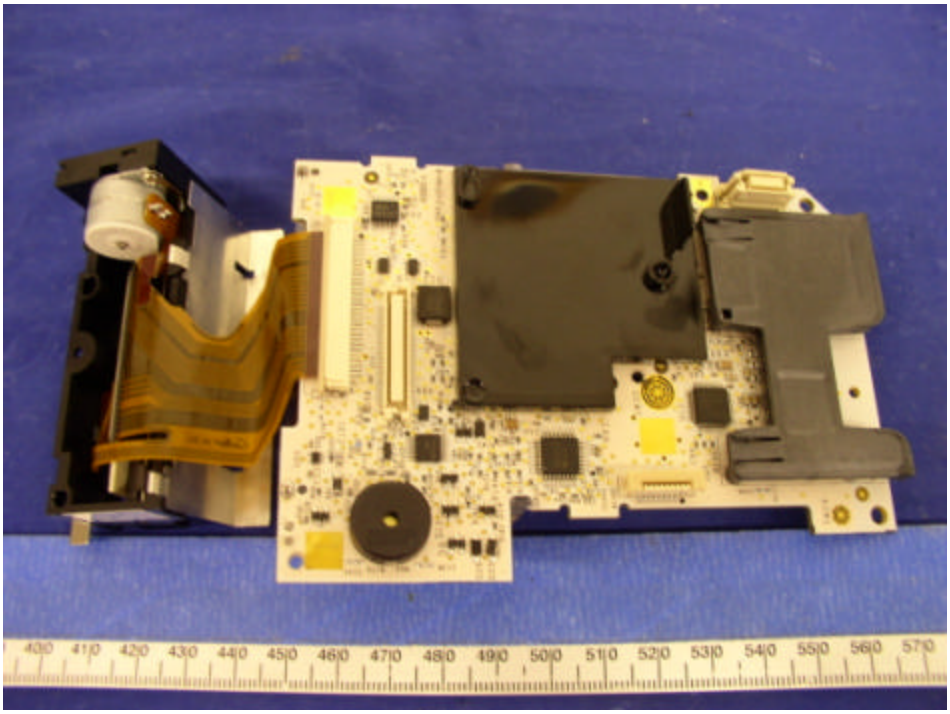


Battery View

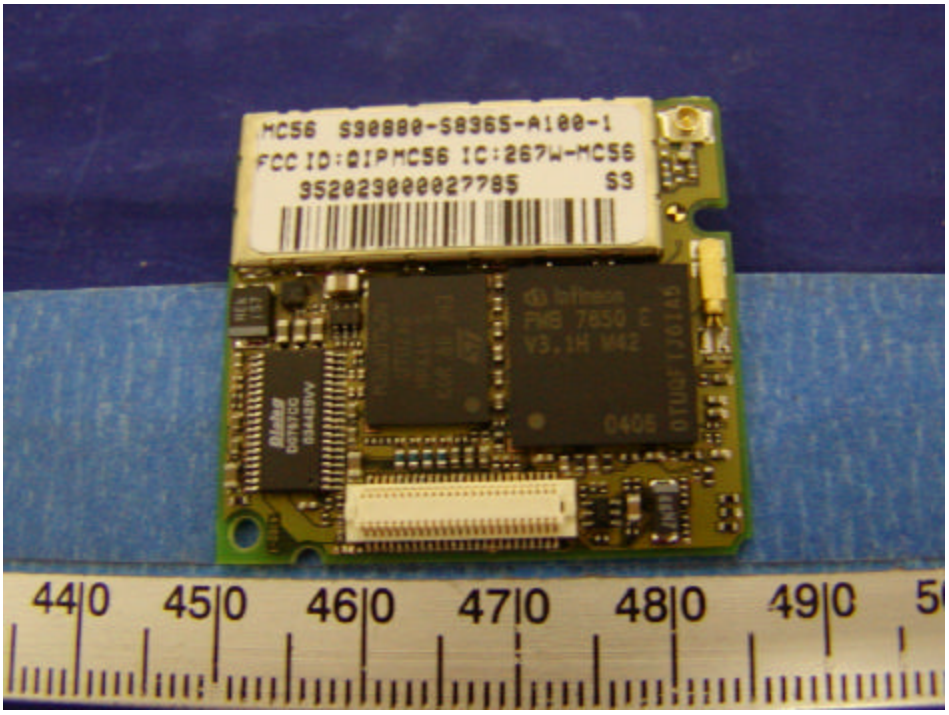
Antenna View



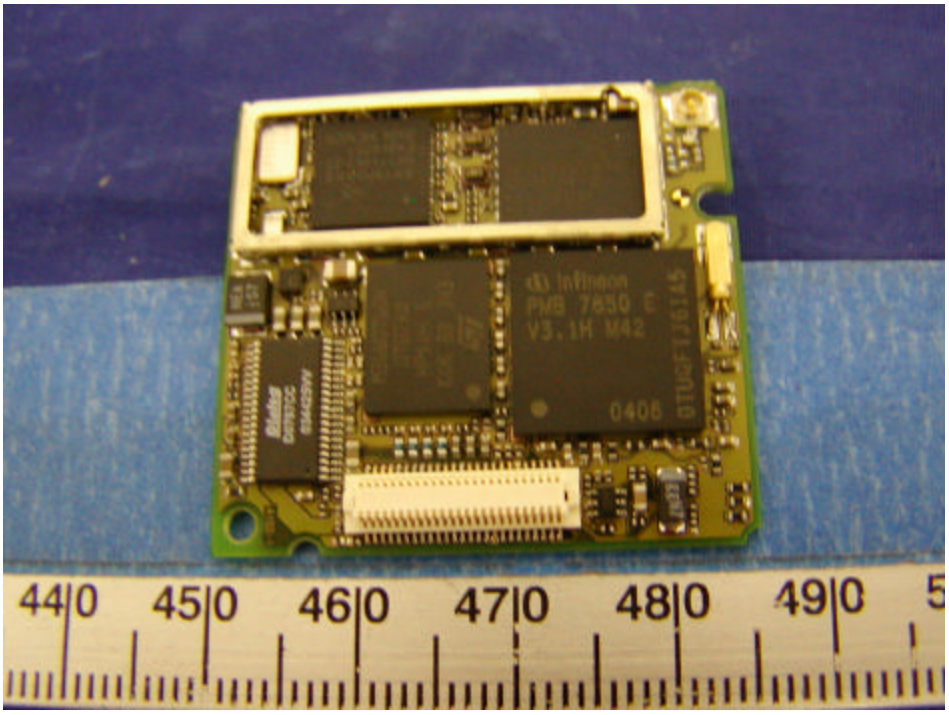
EUT Component with Shielding View



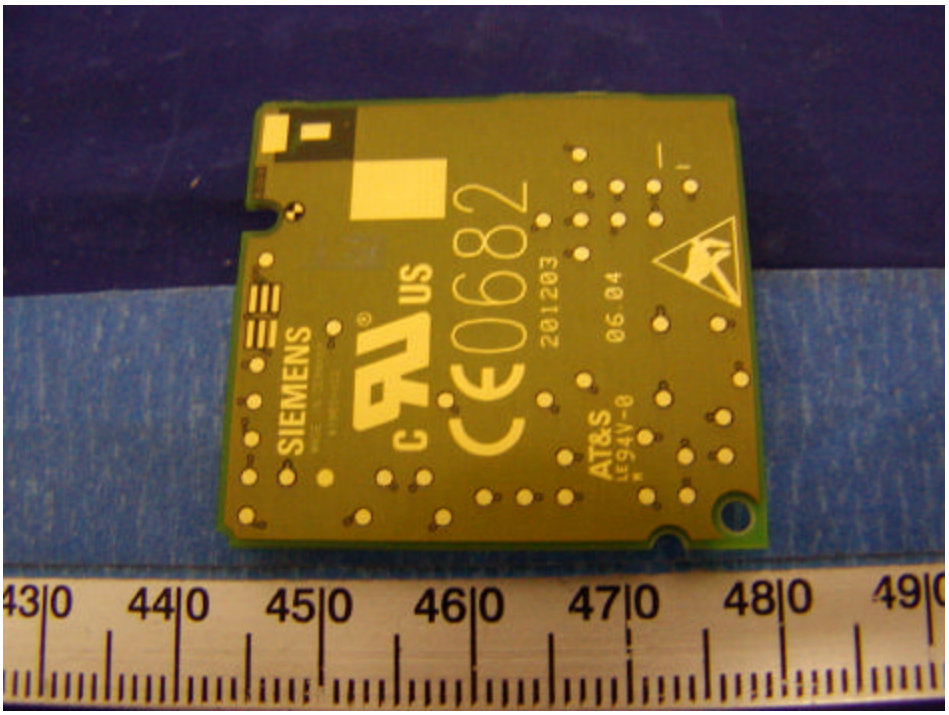
GPRS Module Component View



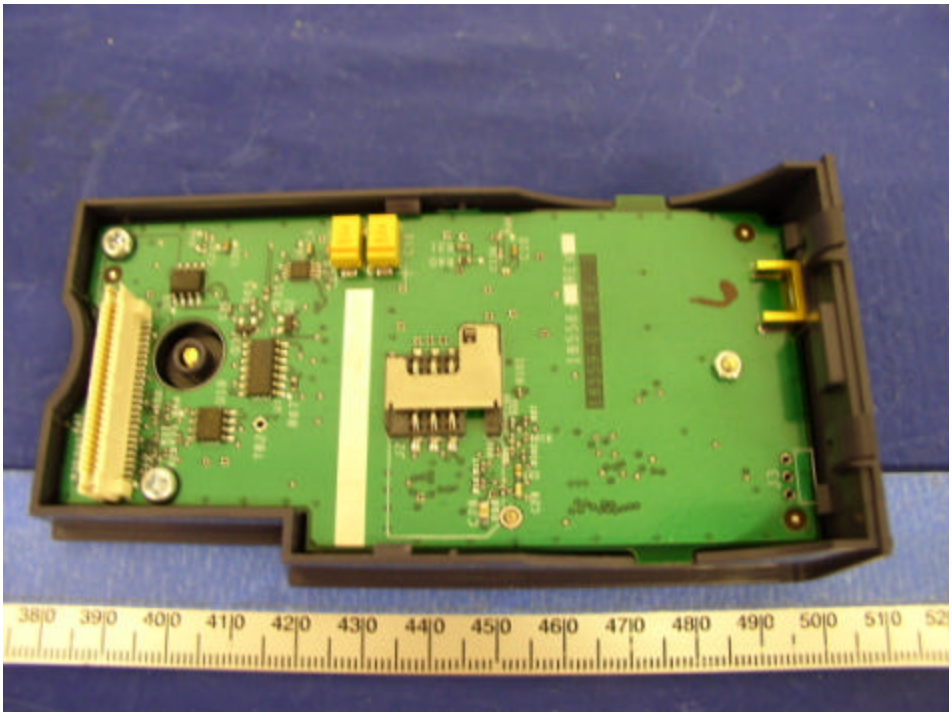
GPRS Module Component without Shielding View



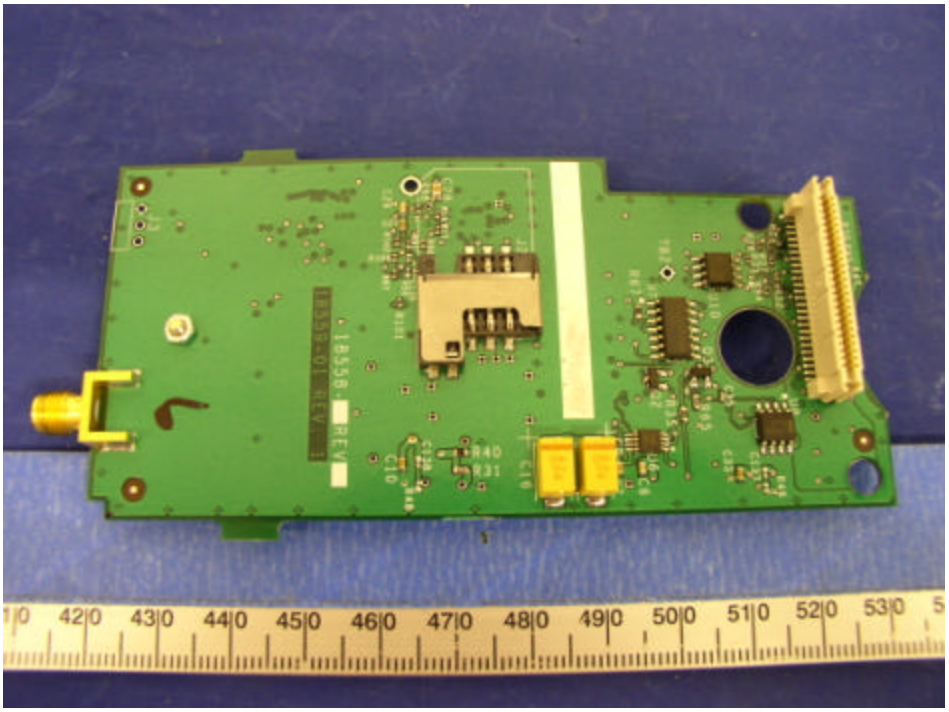
GPRS Module Solder View



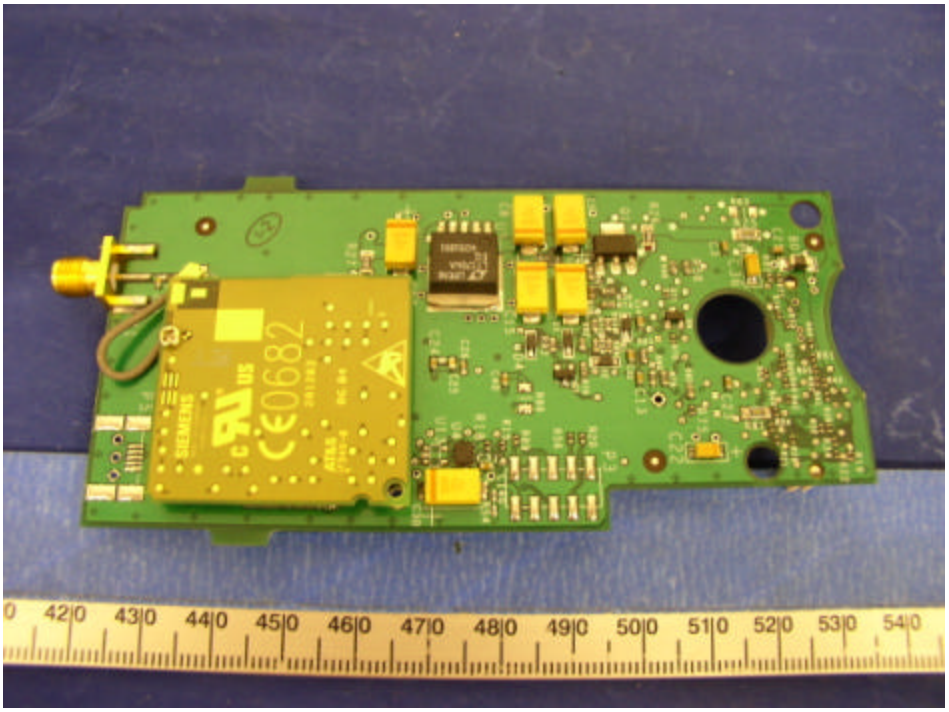
GPRS Interface Board View



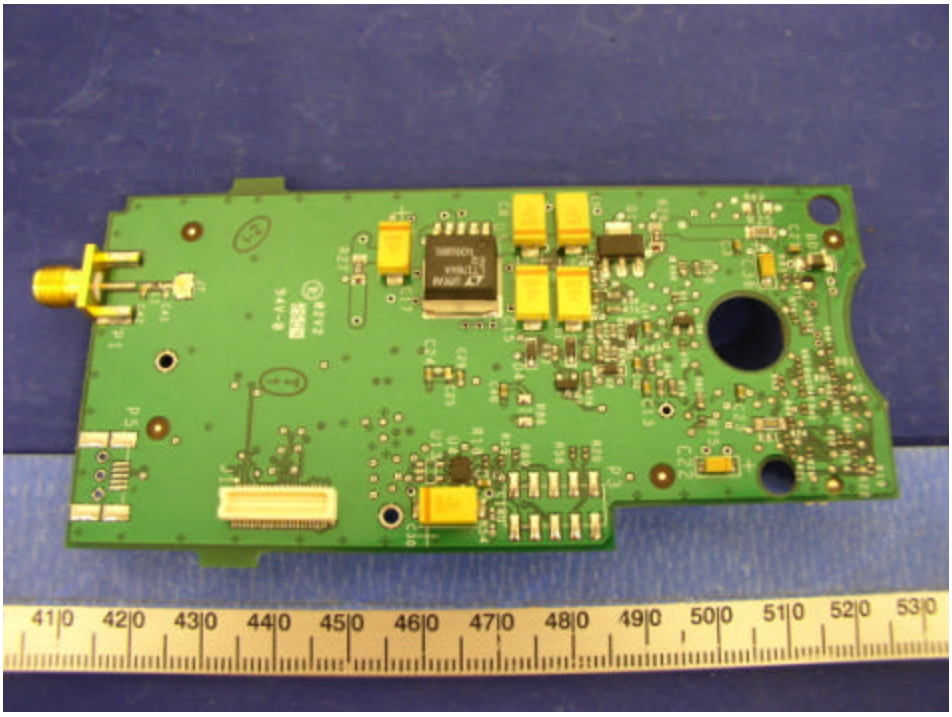
GPRS Interface Board Solder View



GPRS Interface Board Component View with GPRS Module



GPRS Interface Board Component View without GPRS Module



Power Adapter View

EXHIBIT C – Z-Axis

Verifone, Omni 56XXG (GSM850, Top Side of the DUT faced toward and 1.5 cm separation to flat phantom, Ambient Temp = 23 Deg C, Liquid Temp = 22 Deg C, 8/12/04)

SAM Phantom; Section; Position: ; Frequency: 836 MHz

Probe: ES3DV2 - SN3019; ConvF(6.10,6.10,6.10); Crest factor: 8.0; Body 835 MHz: σ = 0.99 mho/m ε_r = 52.9 ρ = 1.00 g/cm^3

: , ()

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