ITS Intertek Testing Services ETL SEMKO

April 24, 2001

ITS Report 20455941
ITS Job J20045594

Mr. Ma'an Ghanma
Cetecom, Inc.
411 Dixon Landing Road
Milpitas, CA 95035

Ph: (408) 586-6242
Fx: (408) 586-6299

Subject: SAR Test Results for NOVATEL Single Band Cell Phone per FCC Part 2.

Mr. Ghanma:

Thank you for your support during this project. ITS is please to provide you with the following attached plots for Specific Absorption Rate (SAR) tests for the NOVATEL Single Band Cell Phone.

The EUT was configured for testing in a typical fashion (as a user would normally use it), and in the confines as outlined in C95.1 (1992) and Supplement C of OET 65 (1998). The EUT was placed in the intended use position, i.e. CENELEC 90° position. This position is defined by a reference plane and a line. The reference plane of the head is given by three points, the auditory canal opening of both ears and center of the closed mouth. The reference line of the EUT is defined by the line, which connects the center of the earpiece with the center of the bottom of the case and lies on the surface of the case facing the phantom. The reference line of the EUT lies in the reference plane of the head. The center of the earpiece of the EUT is place at the entry of the auditory canal. The angle between the reference line of the phone and the line connecting both auditory canal openings is 90°. Measured values were as in the following table.

Plot Number	Frequency	Position	SAR Measurement (mW/g)
1	1850 MHz	Vertical	0.939
2	1880 MHz	Vertical	1.02
3	1910 MHz	Vertical	1.07
4	1850 MHz	Horizontal	0.909
5	1880 MHz	Horizontal	0.920
6	1910 MHz	Horizontal	0.998

The uncertainty budget has been determined for the DASY3 measurement system according to the NIS81 [5] and the NIST 1297 [6] documents and is given in the following table. The extended uncertainty (K=2) was assessed to be 23.5 %

UNCERTAINTY BUDGET				
Uncertainty Description	**Error**	**Distrib.**	**Weight**	**Std.Dev.**
Probe Uncertainty				
Axial isotropy	±0.2 dB	U-shape	0.5	±2.4 %
Spherical isotropy	±0.4 dB	U-shape	0.5	±4.8 %
Isotropy from gradient	±0.5 dB	U-shape	0	
Spatial resolution	±0.5 %	Normal	1	±0.5 %
Linearity error	±0.2 dB	Rectang.	1	±2.7 %
Calibration error	±3.3 %	Normal	1	±3.3 %
SAR Evaluation Uncertainty				
Data acquisition error	±1 %	Rectang.	1	±0.6 %
ELF and RF disturbances	±0.25 %	Normal	1	±0.25 %
Conductivity assessment	±10 %	Rectang.	1	±5.8 %
Spatial Peak SAR Evaluation Uncertainty				
Extrapol boundary effect	±3 %	Normal	1	±3 %
Probe positioning error	±0.1 mm	Normal	1	±1 %
Integrat. And cube orient	±3 %	Normal	1	±3 %
Cube shape inaccuracies	±2 %	Rectang.	1	±1.2 %
Device positioning	±6 %	Normal	1	±6 %
Combined Uncertainties				**±11.7 %**

All measurements described in this report are traceable to National Institute of Standards and Technology (NIST) standards or appropriate national standards.

This letter completes the original work anticipated by our Order No. J20045594. If you have any questions, please do not hesitate to contact us.

Best regards,

David Chernomordik

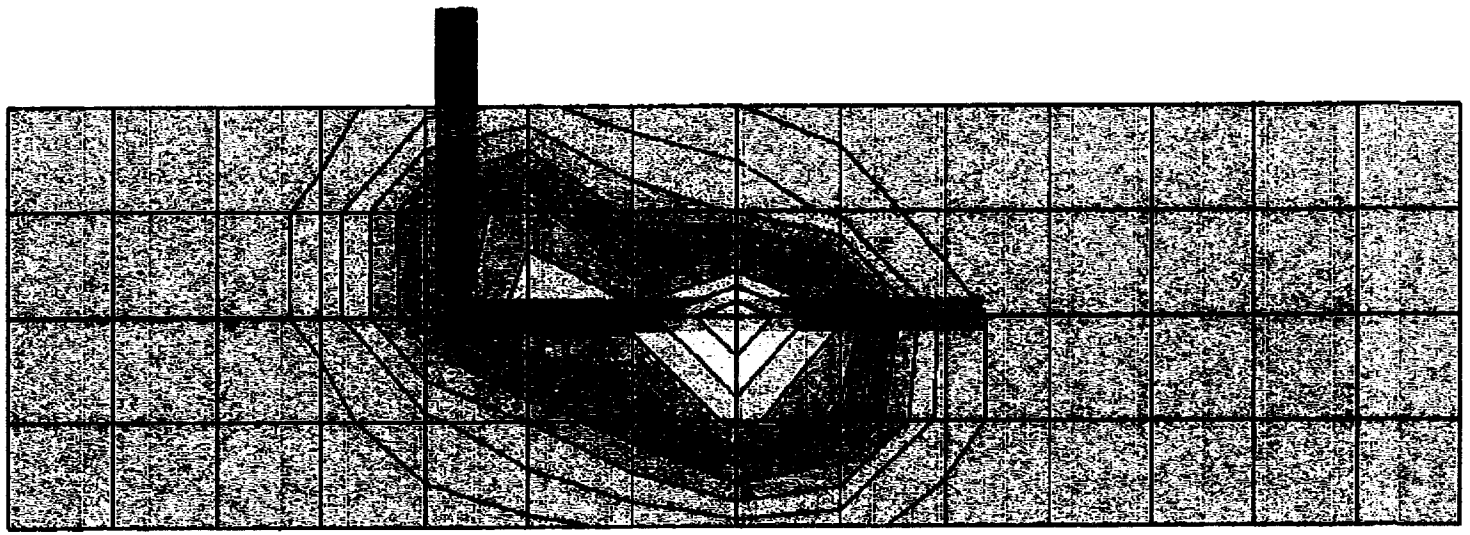
David Chernomordik
EMC Manager
ITS Menlo Park

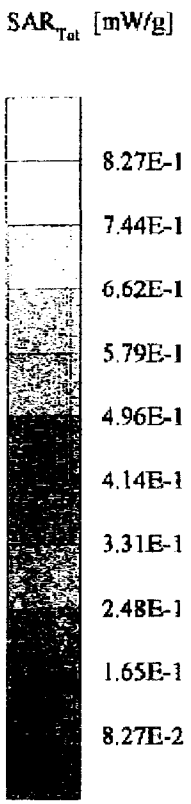
Date: 4/25/01

Plot # 1

Merlin GPRS PCS

Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 1850 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 4.0; Muscle 1900 MHz: σ = 1.69 mho/m ε_r = 52.1 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.939 mW/g, SAR (10g): 0.514 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.06 dB

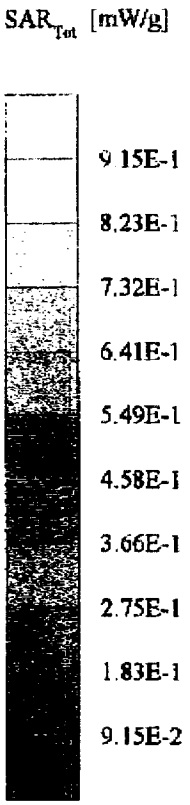




Plot #2

Merlin GPRS PCS

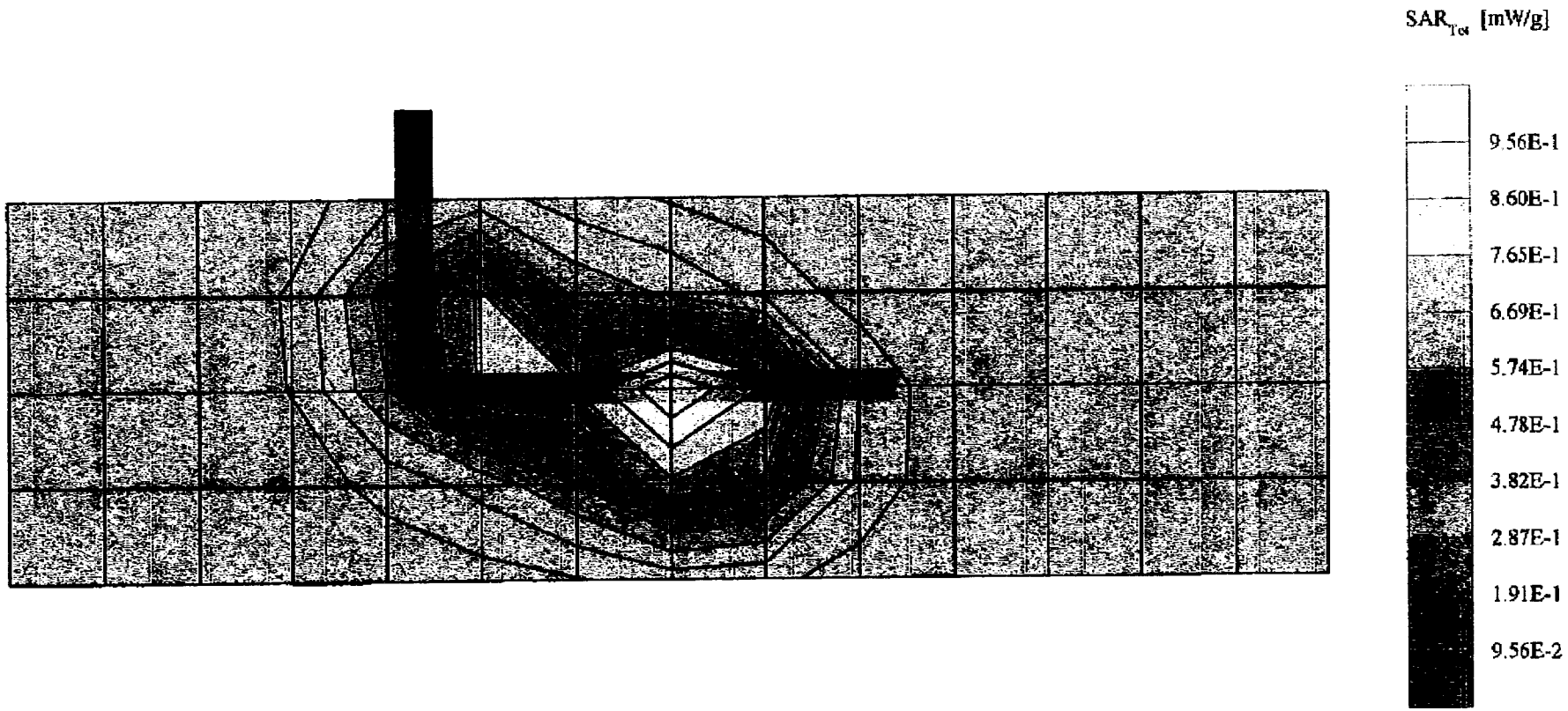
Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 1880 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 4.0; Muscle 1900 MHz: σ = 1.69 mho/m ε_r = 52.1 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.02 mW/g, SAR (10g): 0.554 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.03 dB



Plot #3

Merlin GPRS PCS

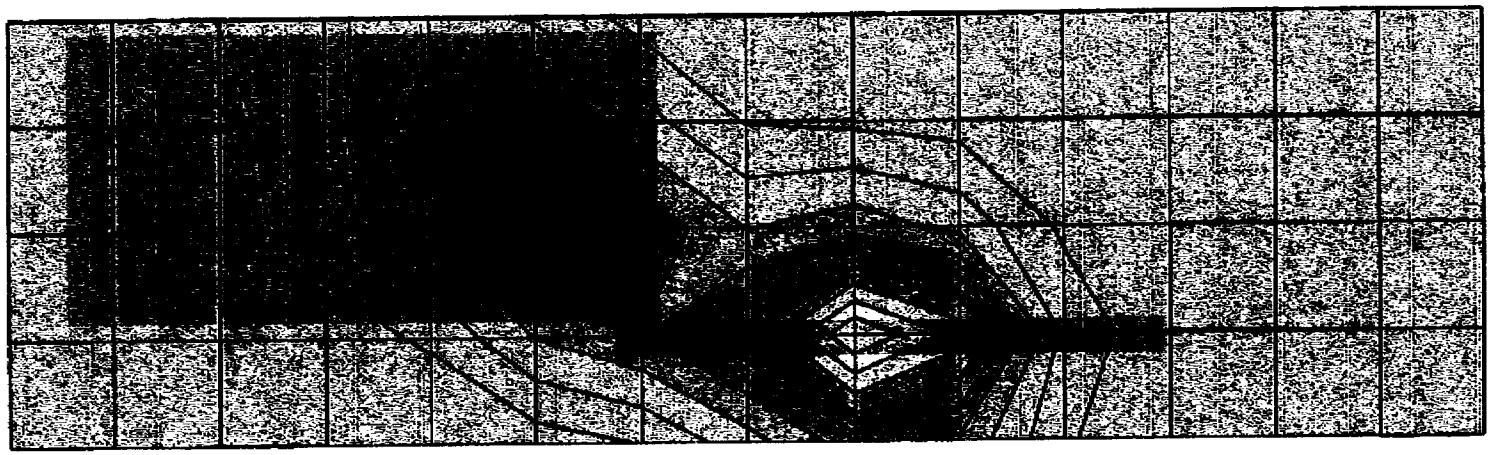
Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 1910 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 4.0; Muscle 1900 MHz: σ = 1.69 mho/m ε_r = 52.1 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.07 mW/g, SAR (10g): 0.581 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.14 dB

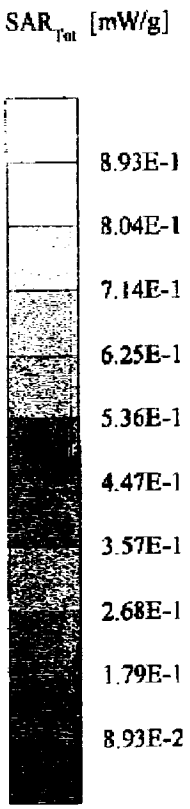


Plot #4

Merlin GPRS PCS

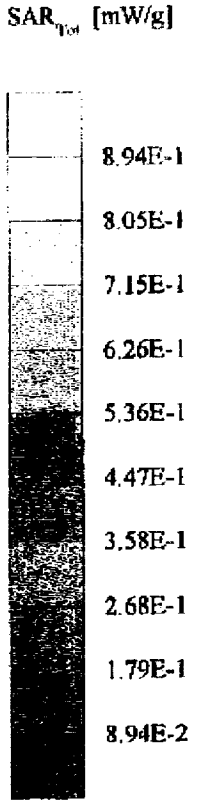
Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 1850 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 4.0; Muscle 1900 MHz: σ = 1.69 mho/m ε_r = 52.1 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.909 mW/g, SAR (10g): 0.500 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.15 dB





Merlin GPRS PCS Plot #5

Generic Twin Phantom, Flat Section; Position: (90°,90°); Frequency: 1880 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 4.0; Muscle 1900 MHz: σ = 1.69 mho/m ε_r = 52.1 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.920 mW/g, SAR (10g): 0.506 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.18 dB



Plot #6

Merlin GPRS PCS

Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 1910 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 4.0; Muscle 1900 MHz: σ = 1.69 mho/m ε_r = 52.1 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.998 mW/g, SAR (10g): 0.545 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.02 dB