1.1 Dipole Validation Check Results

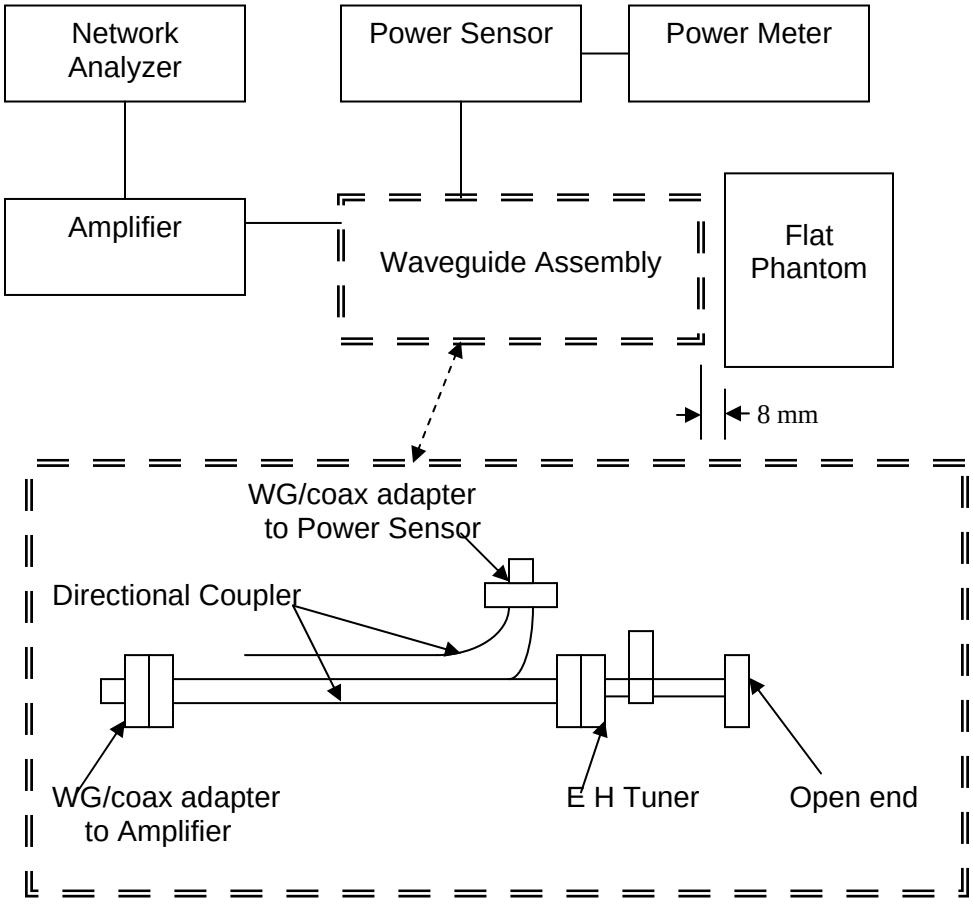
Prior to formal testing at each frequency a system verification was performed in accordance with IEEE 1528. The balanced dipole source was placed at the specified distance in horizontal orientation. All of the testing described in this report was performed within 24 hours of the system verification. The following results were obtained:

Date	Frequency (MHz)	CW input at dipole feed (Watts)	Max measured1g SAR (W/kg)	1 Watt reference SAR value from IEEE 1528 (W/kg)	Difference reference SAR value to normalized SAR
05/21/2007	2450	1.0	53.89	52.4	+2.8%

1.2 Waveguide Validation Check Results

The above 5 GHz verification method uses an open-ended waveguide as the radiating source. A waveguide assembly using WR187 (3.95GHz - 5.85 GHz) components is assembled. The waveguide assembly was placed with its open end 8 mm from the liquid filled flat phantom. A micrometer was used to verify the distance and to verify that the waveguide surface was perpendicular to the phantom surface. The input cable to the waveguide assembly was connected to a network analyzer to measure the return loss. The EH tuner in the waveguide assembly was adjusted until a return loss of 40 dB or better was achieved. The input cable was then connected as shown in the setup diagram below. A complete SAR scan is then performed using the same scan settings (scan dimensions, step size, boundary corrections, etc.) that will be used for compliance testing. The results are compared to FDTD calculations of the SAR distributions for a nearly identical setup that was performed by Om P. Gandhi at the University of Utah and published in standard IEC 62209-2.

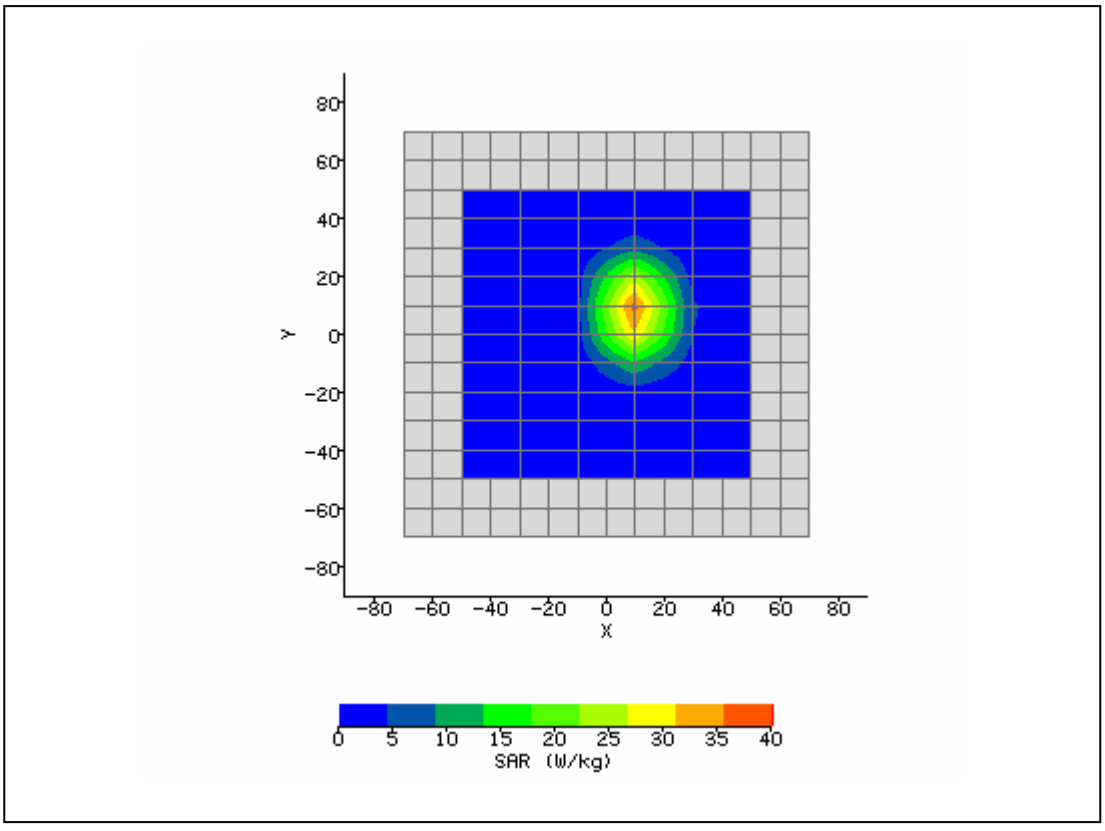
Setup Diagram:



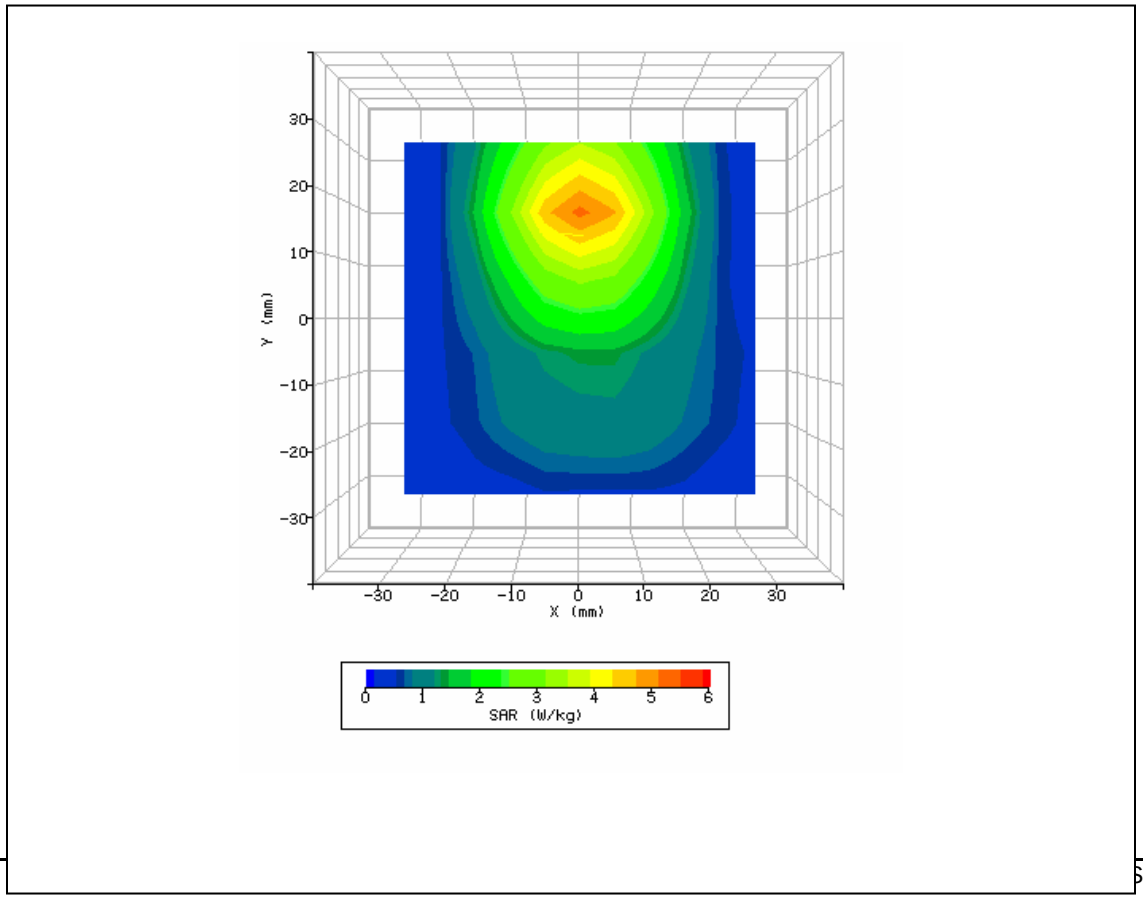
All of the testing described in this report was performed within 24 hours of the system verification. The following results were obtained:

Date	Frequency (MHz)	CW radiated power (Watts)	Max measured 1g SAR (W/kg)	0.1 Watt reference SAR value from IEEE 1528 (W/kg)	Difference reference SAR value to measured SAR
05/24/2007	5200	0.1	3.87	3.57	+8.4 %
05/25/2007	5200	0.1	3.81	3.57	+6.72%
05/29/2007	5200	0.1	3.85	3.57	+7.84%
05/30/2007	5800	0.1	4.26	3.95	+7.9%

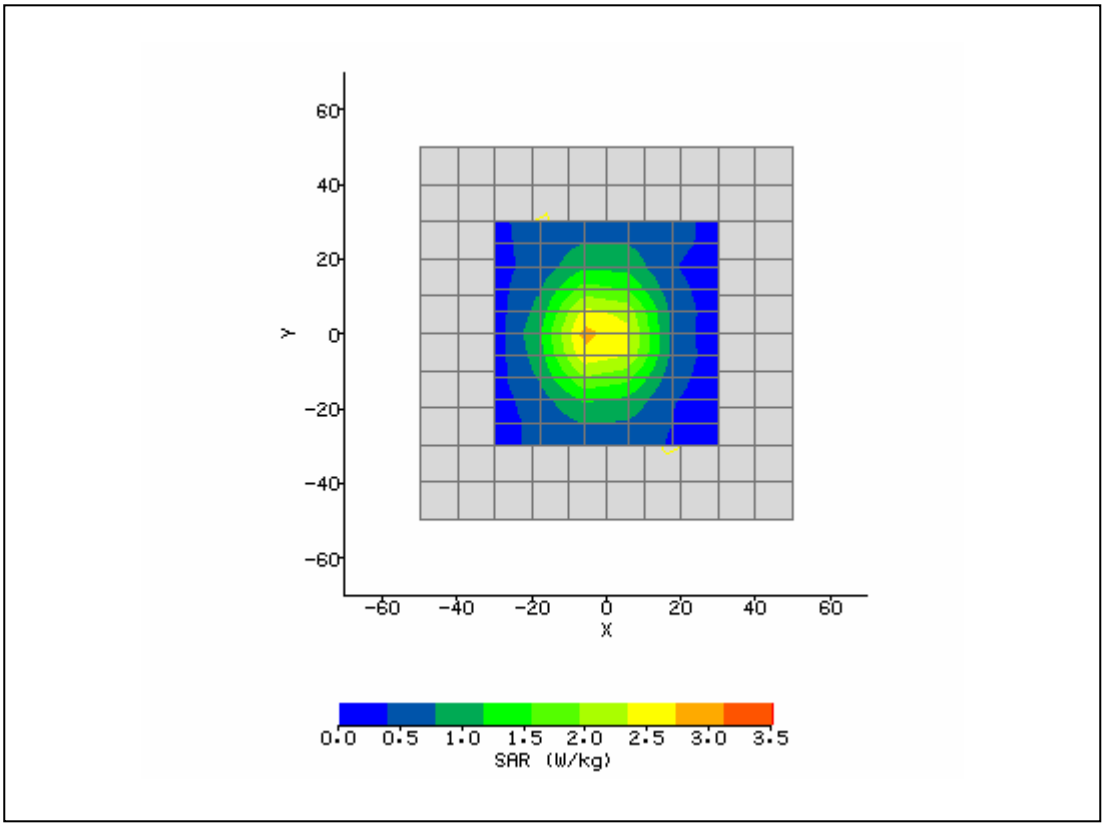
System / software:	SARA2 / 2.40 VPM		**Input Power Drift:**	
Date / Time:	05/21/2007 12:06:49 PM		**DUT Battery Model/No:**	
Filename:	temp.txt		**Probe Serial Number:**	L0016
Ambient Temperature:	22.8°C		**Liquid Simulant:**	2450
Device Under Test:	System verification		**Relative Permittivity:**	39.86
Relative Humidity:	30%		**Conductivity:**	1.811
Phantom S/No:	HeadBox1.csv		**Liquid Temperature:**	22.0°C
Phantom Rotation:	0°		**Max SAR X-axis Location:**	10.00 mm
DUT Position:	verification		**Max SAR Y-axis Location:**	8.00 mm
Antenna Configuration:	dipole		**Max E Field:**	142.82 V/m
Test Frequency:	2450MHz		**SAR 1g:**	53.891 W/kg
Air Factors:	488 / 373 / 340		**SAR 10g:**	22.968 W/kg
Conversion Factors:	.613 / .613 / .613		**SAR Start:**	4.031 W/kg
Type of Modulation:	CW		**SAR End:**	4.042 W/kg
Modn. Duty Cycle:			**SAR Drift during Scan:**	0.27 %
Diode Compression Factors (V*200):	20 / 20 / 20		**Probe battery last changed:**	05/21/2007
Input Power Level:	max		**Extrapolation:**	poly4



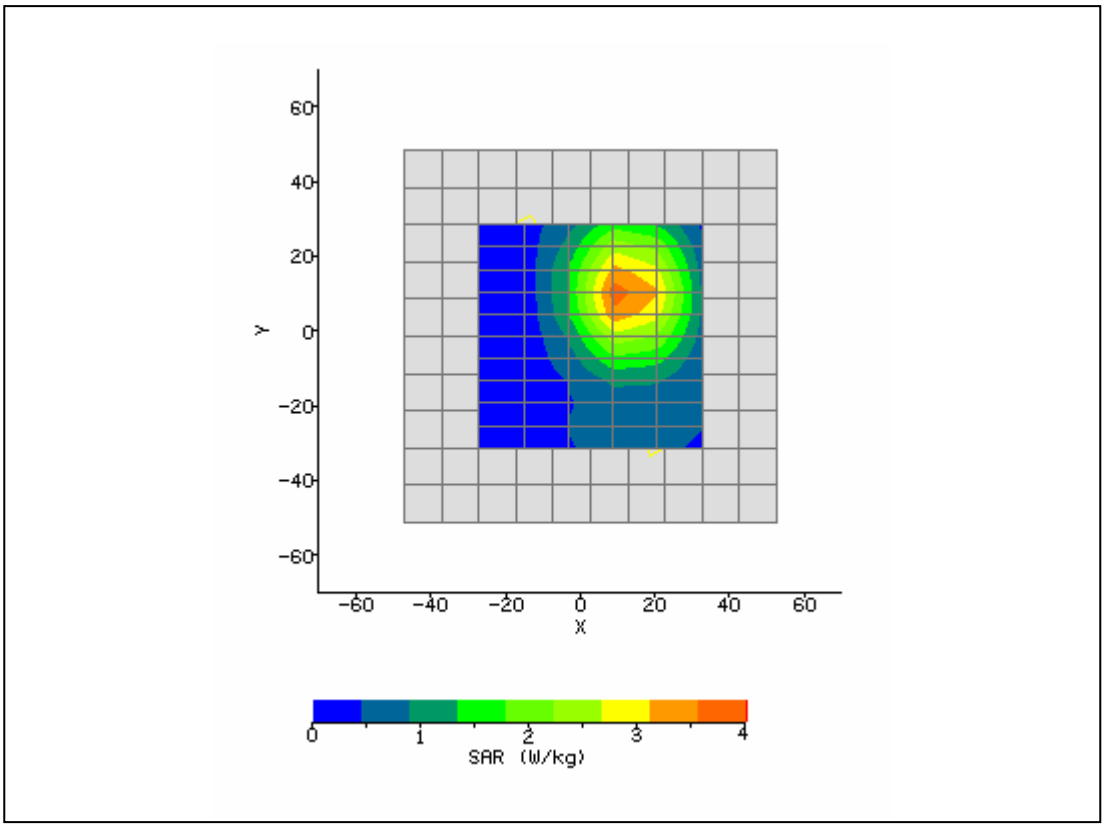
System / software:	SARA2 / 2.40 VPM		**Input Power Drift:**	
Date / Time:	05/24/2007 12:03:47 PM		**DUT Battery Model/No:**	
Filename:	WG_100mw_3d.txt		**Probe Serial Number:**	M0024
Ambient Temperature:	22.8°C		**Liquid Simulant:**	5200
Device Under Test:	SAR System		**Relative Permittivity:**	36.21
Relative Humidity:	30%		**Conductivity:**	4.659
Phantom S/No:	HeadBox2.csv		**Liquid Temperature:**	22.0°C
Phantom Rotation:	0°		**Max SAR Y-axis Location:**	0.60 mm
DUT Position:	Bottom 8mm		**Max SAR Z-axis Location:**	-471.70 mm
Antenna Configuration:	WG		**Max E Field:**	33.02 V/m
Test Frequency:	5200MHz		**SAR 1g:**	3.866 W/kg
Air Factors:	2685 / 2277 / 2238		**SAR 10g:**	2.788 W/kg
Conversion Factors:	.494 / .494 / .494		**SAR Start:**	1.150 W/kg
Type of Modulation:			**SAR End:**	1.126 W/kg
Modn. Duty Cycle:			**SAR Drift during Scan:**	-2.04 %
Diode Compression Factors (V*200):	20 / 20 / 20		**Probe battery last changed:**	07/02/2007
Input Power Level:	0.1W		**Extrapolation:**	poly4



System / software:	SARA2 / 2.40 VPM		**Input Power Drift:**	
Date / Time:	5/25/2007 8:16:11 AM		**DUT Battery Model/No:**	
Filename:	temp.txt		**Probe Serial Number:**	M0024
Ambient Temperature:	22.8°C		**Liquid Simulant:**	5200
Device Under Test:	System		**Relative Permittivity:**	36.21
Relative Humidity:	30%		**Conductivity:**	4.659
Phantom S/No:	HeadBox1.csv		**Liquid Temperature:**	22.0°C
Phantom Rotation:	0°		**Max SAR X-axis Location:**	-1.20 mm
DUT Position:	verification		**Max SAR Y-axis Location:**	-0.60 mm
Antenna Configuration:	waveguide		**Max E Field:**	26.34 V/m
Test Frequency:	5200MHz		**SAR 1g:**	3.811 W/kg
Air Factors:	2685 / 2277 / 2238		**SAR 10g:**	2.008 W/kg
Conversion Factors:	.390 / .390 / .390		**SAR Start:**	0.664 W/kg
Type of Modulation:			**SAR End:**	0.628 W/kg
Modn. Duty Cycle:			**SAR Drift during Scan:**	-5.40 %
Diode Compression Factors (V*200):	20 / 20 / 20		**Probe battery last changed:**	5/25/07
Input Power Level:	100 mW		**Extrapolation:**	poly4



System / software:	SARA2 / 2.40 VPM		**Input Power Drift:**	
Date / Time:	5/29/2007 8:12:19 AM		**DUT Battery Model/No:**	
Filename:	temp.txt		**Probe Serial Number:**	M0024
Ambient Temperature:	22.8°C		**Liquid Simulant:**	5200
Device Under Test:	System		**Relative Permittivity:**	36.21
Relative Humidity:	30%		**Conductivity:**	4.659
Phantom S/No:	HeadBox1.csv		**Liquid Temperature:**	22.0°C
Phantom Rotation:	0°		**Max SAR X-axis Location:**	-1.20 mm
DUT Position:	verification		**Max SAR Y-axis Location:**	-0.60 mm
Antenna Configuration:	waveguide		**Max E Field:**	26.34 V/m
Test Frequency:	5200MHz		**SAR 1g:**	3.853 W/kg
Air Factors:	2685 / 2277 / 2238		**SAR 10g:**	3.002 W/kg
Conversion Factors:	.390 / .390 / .390		**SAR Start:**	0.724 W/kg
Type of Modulation:			**SAR End:**	0.692 W/kg
Modn. Duty Cycle:			**SAR Drift during Scan:**	-4.41 %
Diode Compression Factors (V*200):	20 / 20 / 20		**Probe battery last changed:**	5/29/07
Input Power Level:	100 mW		**Extrapolation:**	poly4



System / software:	SARA2 / 2.40 VPM		**Input Power Drift:**	
Date / Time:	5/30/2007 12:03:47 PM		**DUT Battery Model/No:**	
Filename:	WG_100mw_3d.txt		**Probe Serial Number:**	M0024
Ambient Temperature:	22.8°C		**Liquid Simulant:**	5800
Device Under Test:	SAR System		**Relative Permittivity:**	35.55
Relative Humidity:	30%		**Conductivity:**	5.31
Phantom S/No:	HeadBox2.csv		**Liquid Temperature:**	22.0°C
Phantom Rotation:	0°		**Max SAR Y-axis Location:**	0.60 mm
DUT Position:	Bottom 8mm		**Max SAR Z-axis Location:**	-471.70 mm
Antenna Configuration:	WG		**Max E Field:**	33.02 V/m
Test Frequency:	58000MHz		**SAR 1g:**	4.263 W/kg
Air Factors:	2685 / 2277 / 2238		**SAR 10g:**	
Conversion Factors:	.494 / .494 / .494		**SAR Start:**	1.150 W/kg
Type of Modulation:			**SAR End:**	1.126 W/kg
Modn. Duty Cycle:			**SAR Drift during Scan:**	-2.04 %
Diode Compression Factors (V*200):	20 / 20 / 20		**Probe battery last changed:**	05/30/2007
Input Power Level:	0.1W		**Extrapolation:**	poly4