Intertek Testing Services ETL SEMKO

Specific Absorption Rate (SAR) Test Report

for

Samsung Electronics CO., LTD

on the

GSM900 / PCS1900 Dual Band Phone
Model Number: SGH-N625
FCC ID: A3LSGH-N625

Test Report: 30241812
Date of Report: April 27, 2002
Revised: June 19, 2002

Job #: 3024181
Date of Test: April 23 to 26, 2002

Total No of Pages Contained in this Report: 61 .

Tested by:	Suresh Kondapalli
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Review Date: 6/19/02

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1.0 JOB DESCRIPTION

1.1 Client Information

The SGH-N625 has been tested at the request of:

Company: Samsung Electronics CO., LTD
Suwon PO Box 105,
416 Maetan-3dong, Paldal-gu
Suwon-si, Gyeonggi-do 442-742
Korea

Name of contact: Mr. Lee Yong Han
Telephone: +82-31-279-6064
Fax: +82-31-279-6162

1.2 Equipment under test (EUT)

Product Descriptions:

Equipment	GSM900 / PCS1900 Dual Band Phone		
Trade Name	Samsung	P/N.	SGH-N625
FCC ID	A3LSGH-N625	S/N No.	Not Labeled
Category	Portable	RF Exposure	Uncontrolled Environment
Frequency Band	1850 - 1910 MHz	System	GMS/GPRS

EUT Antenna Description			
Type	Monopole	Configuration	Fixed, 360^{o} Rotation
Dimensions	19.7 mm	Gain	-2.6 dBi
Location	Right Side		

Use of Product : **W**ireless communication

Manufacturer: Samsung Electronics CO., LTD

Production is planned: [x] Yes, [ ] No

EUT receive date: April 9, 2002

EUT received condition: Good working condition prototype, identical to the production units.

Test start date: April 23, 2002

Test end date: April 26, 2002

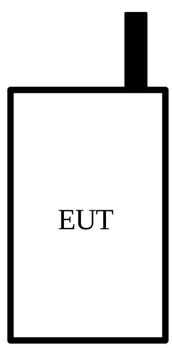
1.3 Test Plan Reference

FCC Rule: Part 2.1093, FCC's OET Bulletin 65, Supplement C (Edition 01-01)

1.4 System Test Configuration

1.4.1 System Block Diagram & Support equipment

The diagram shown below details test configuration of the equipment under test.



No Support Equipment was used. The test sample was operated in a test mode that allows control of the transmitter without the need to place actual phone calls. For the purposes of this test the device is commanded to test mode and manually set to the proper channel, transmitter power level and transmit mode of operation. The device was then placed in the SAR Measurement System with a fully charged battery.

1.4.2 Test Position for Brain

The SGH-N625 was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in C95.1 (1992) and Supplement C of OET 65 (2001). The SGH-N625 was placed against the head phantom in 2 test positions as detailed in Figures 1 and 2 below.

Test Configuration for SAR

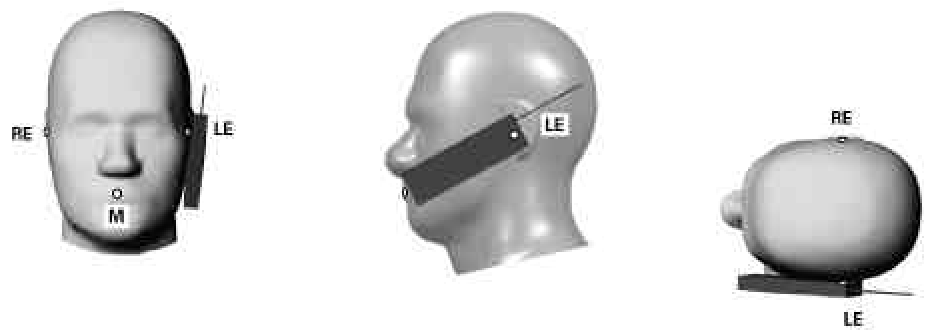


Figure 1 – Phone position 1, “cheek” or “touch” position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning, are indicated.

Figure 2 – Phone position 2, “tilted” position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning, are indicated.

The positioning procedure is described below.

The EUT was positioned in a normal operating position with the “test device reference point” located along the “vertical centerline” on the front of the device aligned to the “ear reference point”. The “test device reference point” is located at the same level as the center of the earpiece region. The “vertical centerline” is bisecting the front surface of the handset at its top and bottom edges. A “ear reference point” is located on the outer surface of the head phantom on each ear spacer. It is located 1.5 cm above the center of the ear canal entrance in the “phantom reference plane” defined by the three lines joining the center of each “ear reference point” (left and right) and the tip of the mouth.

The EUT is initially positioned with the earpiece region pressed against the ear spacer of a head phantom in “initial ear position”. The “test device reference point” was aligned to the “ear reference point” on the head phantom and the “vertical centerline” was aligned to the “phantom reference plane”. While maintaining these three alignments, the body of the handset is gradually adjusted to each of the following positions for evaluating SAR:

1. “Cheek/Touch Position” – the device is brought toward the mouth of the head phantom by pivoting against the “ear reference point”. This test position is established:

   i) When any point on the display, keypad or mouthpiece portions of the handset is in contact with the phantom.

   ii) (or) When any portion of a foldout, sliding or similar keypad cover opened to its intended self-adjusting normal use position is in contact with the cheek or mouth of the phantom.

2 “Ear/Tilt Position” – With the handset aligned in the “Cheek/Touch Position”:

   i) If the earpiece of the handset is not in full contact with the phantom’s ear spacer (in the “Cheek/Touch position”) and the peak SAR location for the “Cheek/Touch” position is located at the ear spacer region or corresponds to the earpiece region of the handset, the device is returned to the “initial ear position” by rotating it away from the mouth until the earpiece is in full contact with the ear spacer.

   ii) (otherwise) The handset is moved (translated) away from the cheek perpendicular to the line passes through both “ear reference points” for approximate 2-3 cm. While it is in this position, the handset is tilted away from the mouth with respect to the “test device reference point” by 15°. After the tilt, it is then moved (translated) back toward the head perpendicular to the line passes through both “ear reference points” until the device touches the phantom or the ear spacer. If the antenna touches the head first, the positioning process is repeated with a tilt angle less than 15° so that the device and its antenna would touch the phantom simultaneously.

1.4.3 Test Position for Muscle

The SGH-N625 was placed against the flat phantom in the test position as detailed in Figure 3 below. As the belt clip and holster were not supplied with the device, the SGH-N625 was positioned by touching phantom (worst case position).

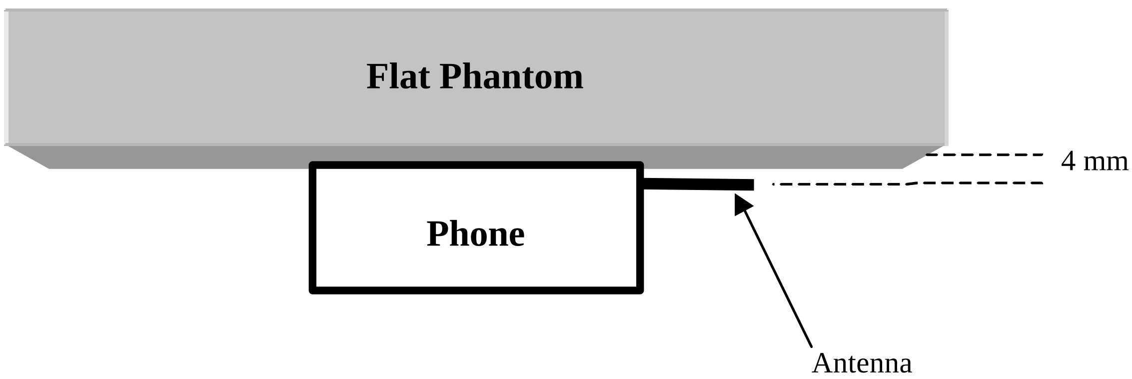


Figure 3 – Intended use position for Muscle SAR (Body Worn)

1.4.4 Test Condition

During tests, the worst case data (max. RF coupling) was determined with following conditions:

EUT Antenna	Fixed length	**Orientation**	On the top
Usage	Right hand, Left hand and body worn.	**Distance between antenna and the phantom surface:**	Left Side: 20.8 mm, tilt position 14.6 mm, check position
			Right Side: 25.0 mm, tilt position 18.8 mm, check position
			4 mm, body worn position
Simulating human Body/hand	Body	**EUT Battery**	LI-ION battery
Conducted Peak Output Power	**Frequency MHz**		**Output Power dBm**
	1850		29.7
	1880		29.5
	1910		29.3

The spatial peak SAR values were accessed for lowest, middle and highest operating channels defined by the manufacturer.

Antenna port power measurement was performed, with the HP 435A power meter, before and after the SAR tests to ensure that the SGH-N625 operated at the highest power level.

1.5 Modifications required for compliance

No modifications were implemented by Intertek Testing Services.

1.6 Additions, deviations and exclusions from standards

No additions, deviations or exclusions have been made from standard.

2.0 SAR EVALUATION

2.1 SAR Limits

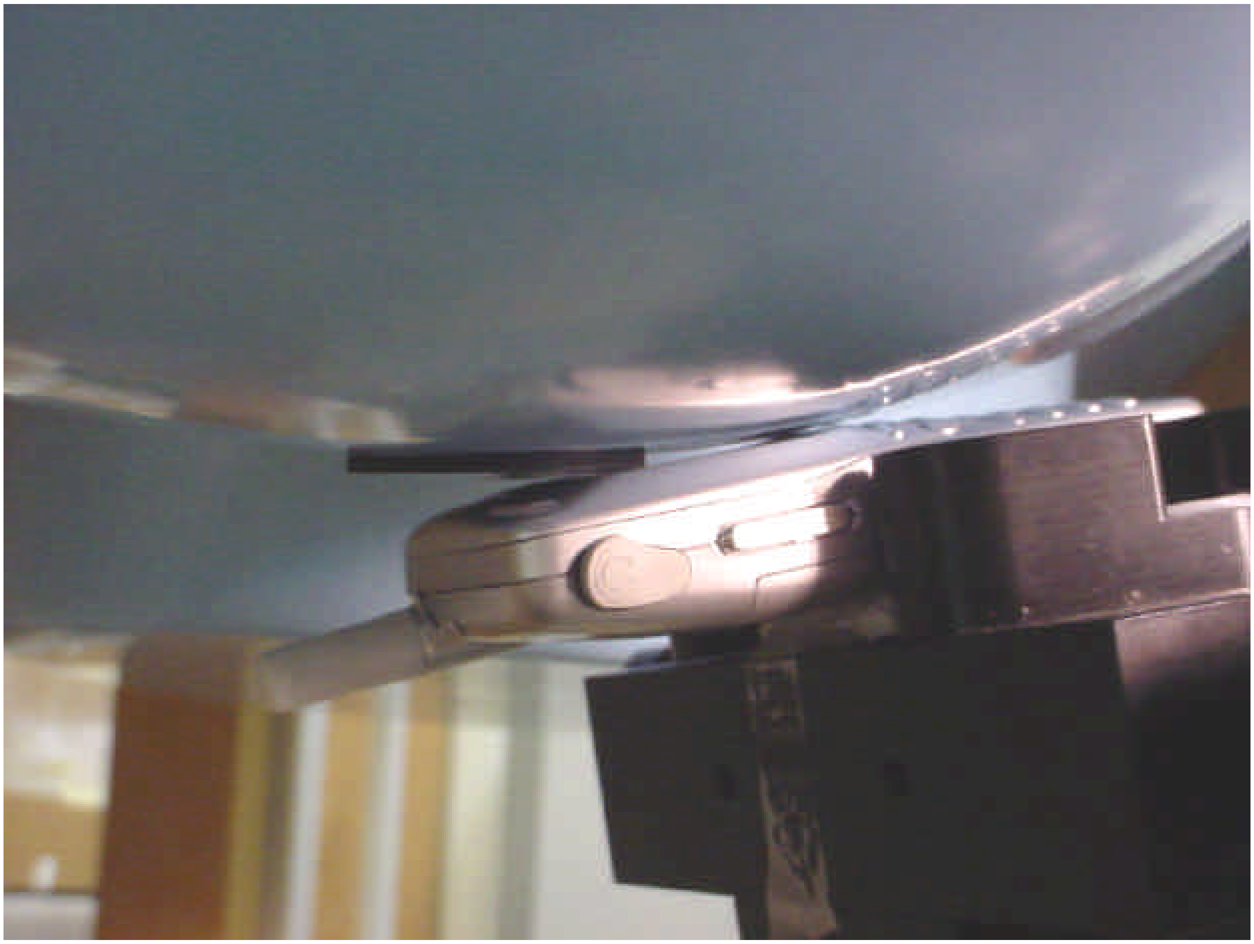
The following FCC limits for SAR apply to devices operate in General Population/Uncontrolled Exposure environment:

EXPOSURE **(General Population/Uncontrolled Exposure environment)**	**SAR** **(W/kg)**
Average over the whole body	0.08
Spatial Peak (1g)	1.60
Spatial Peak for hands, wrists, feet and ankles (10g)	4.00

2.2 Configuration Photographs

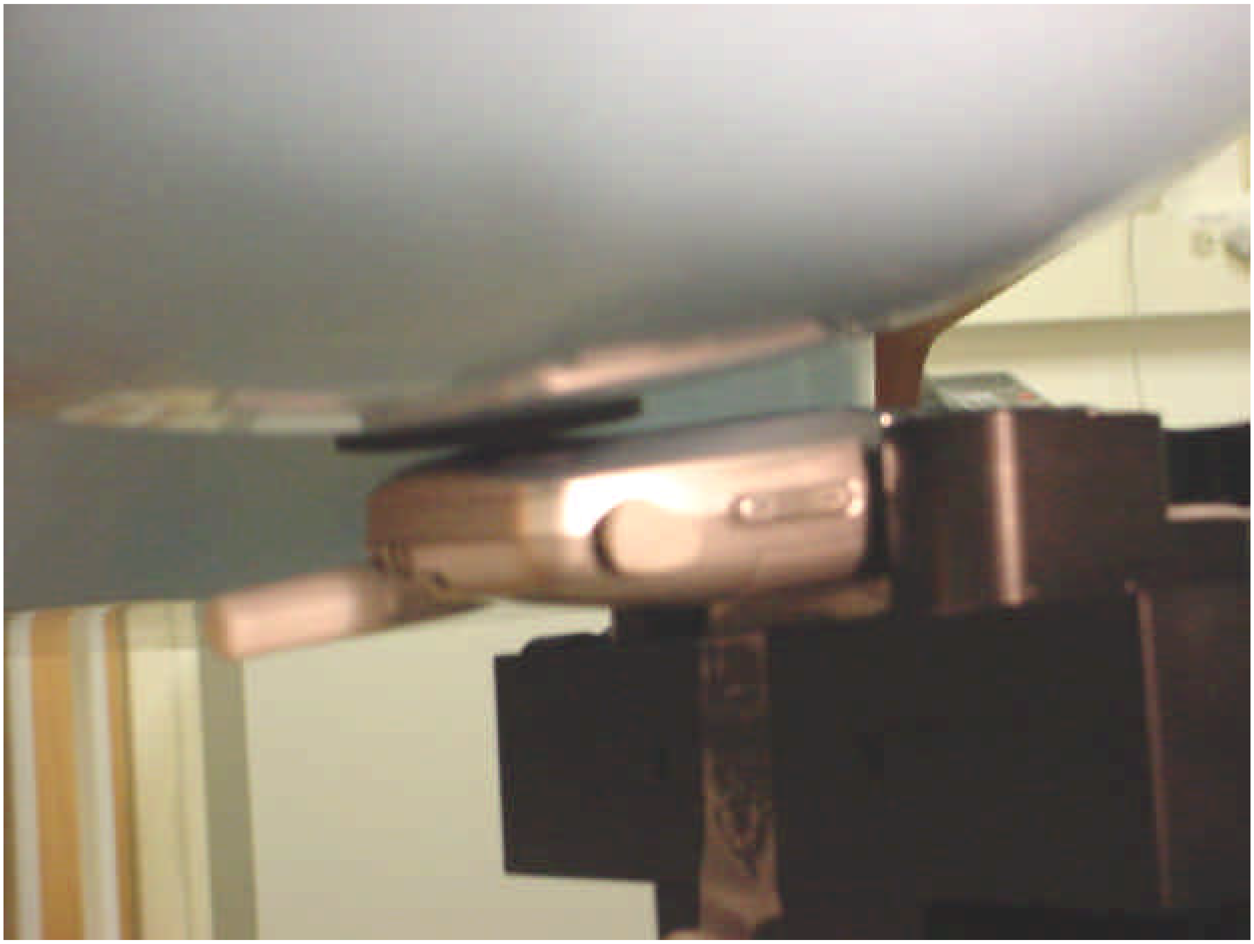
SAR Measurement Test Setup

Right Cheek



SAR Measurement Test Setup

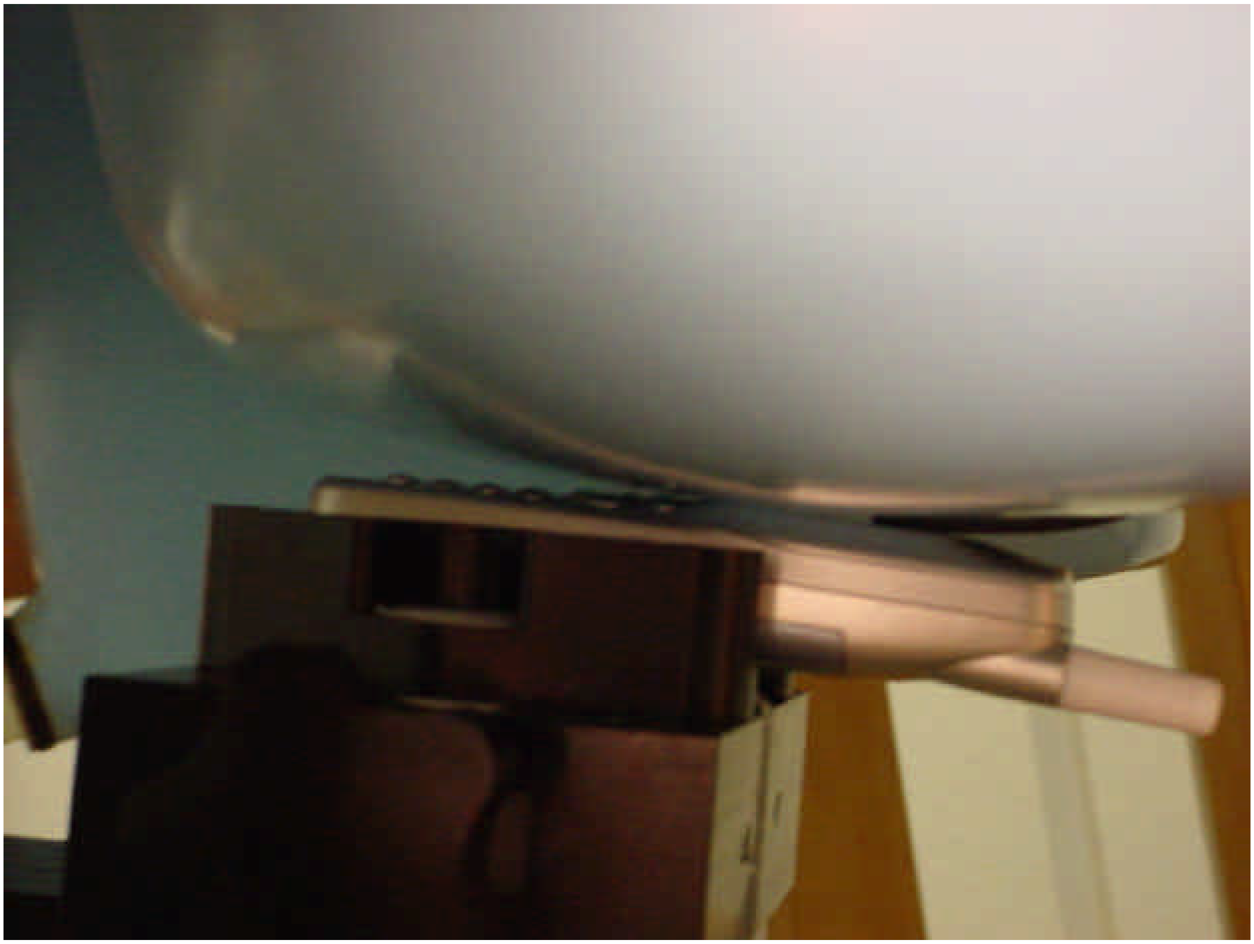
Right Tilt



2.2 Configuration Photographs (Continued)

SAR Measurement Test Setup

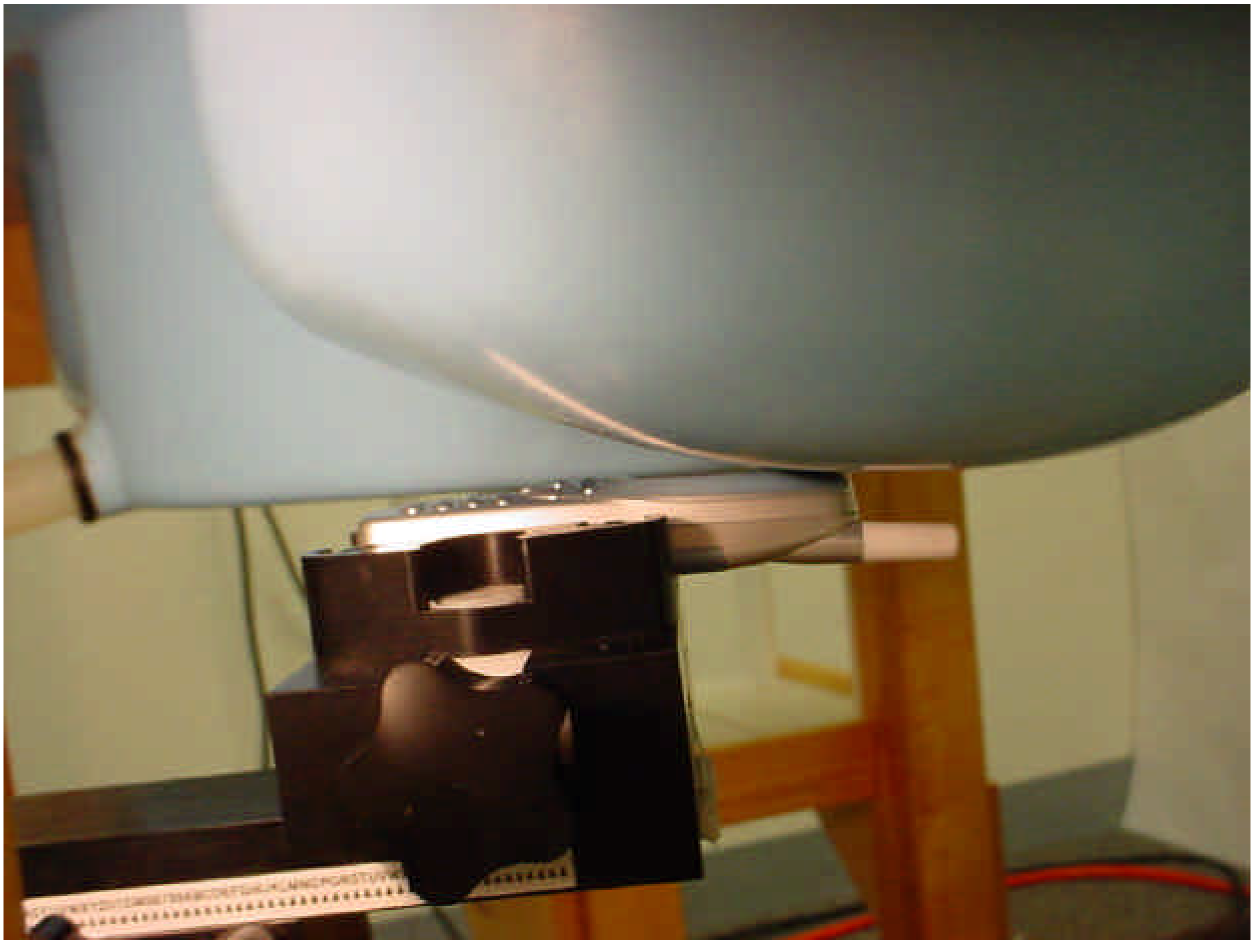
Left Cheek



2.2 Configuration Photographs (Continued)

SAR Measurement Test Setup

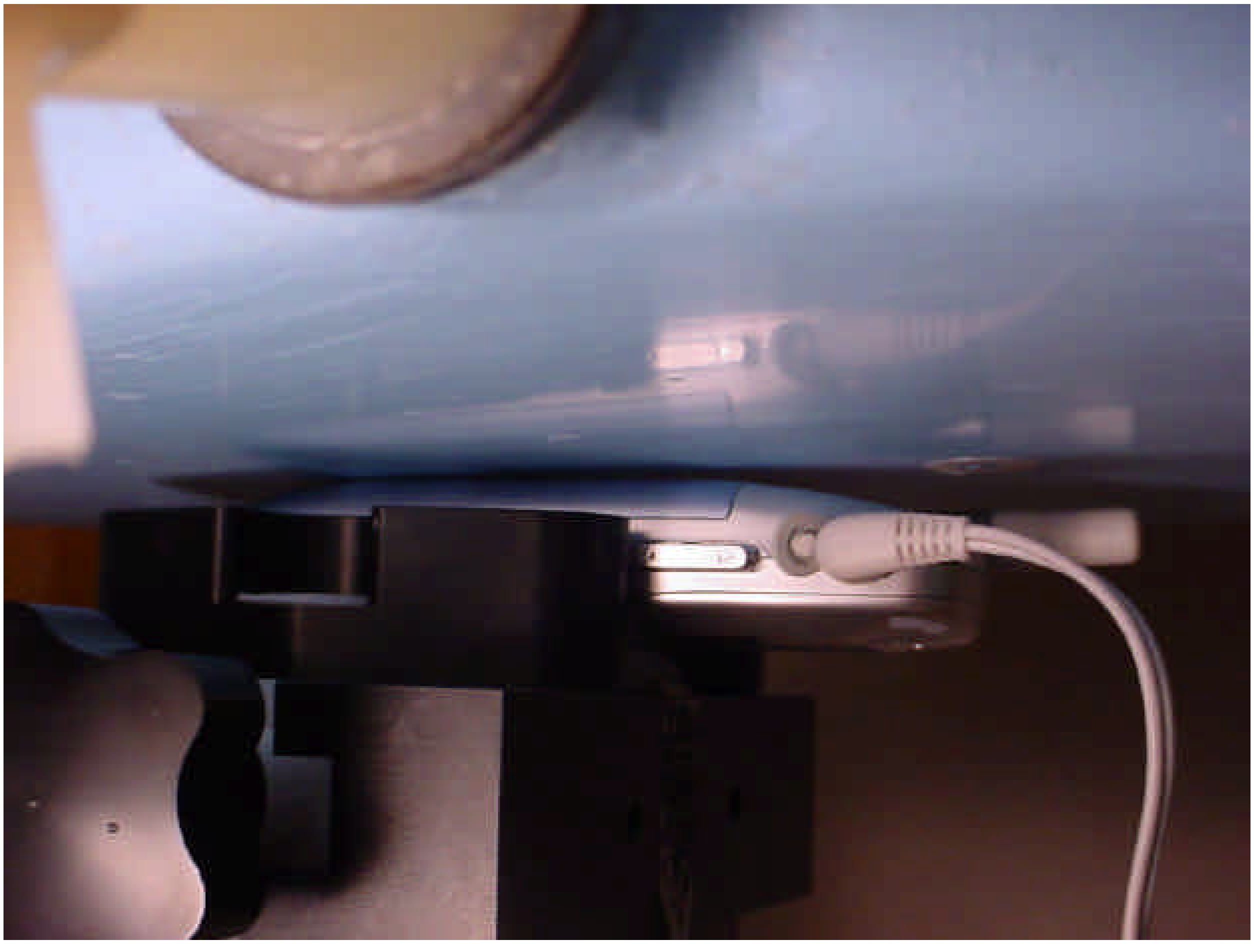
Left Tilt



2.2 Configuration Photographs (Continued)

SAR Measurement Test Setup

Body SAR



2.2 Configuration Photographs (Continued)

EUT Photo

2.2 Configuration Photographs (Continued)

EUT Photo

2.2 Configuration Photographs (Continued)

EUT Photo

2.2 Configuration Photographs (Continued)

EUT Photo

2.2 Configuration Photographs (Continued)

EUT Photo

EUT with Accessory

2.3 System Verification

Prior to the assessment, the system was verified to the ±10% of the specifications by using the system validation kit. The validation was performed at 1800 MHz.

Validation kit	Targeted SAR_{1g} (mW/g)	Measured SAR_{1g} (mW/g)	Plot #
D1800V2, S/N #: 224	9.77	9.60	16

2.4 Evaluation Procedures

The SAR evaluation was performed with the following procedures:

a. SAR was measured at a fixed location above the reference point and used as a reference value for the assessing the power drop.

b. The SAR distribution at the exposed side of the flat Phantom was measured at a distance of 30 mm from the inner surface of the shell. The area covered the entire dimension of the head and the horizontal grid spacing was 20 mm x 20 mm. Based on this data, the area of the maximum absorption was determined by spline interpolation.

c. Around this point, a volume of 32 mm x 32 mm x 34 mm was assessed by measuring 5 x 5 x 7 points. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

   i) The data at the surface were extrapolated, since the center of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measurement point is 1.6 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in Z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.

   ii) The maximum interpolated value was searched with a straightforward algorithm. Around this maximum, the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 3-D spline interpolation algorithm. The 3-D spline is composed of three one-dimensional splines with the “Not a knot” condition (in x, y and z directions). The volume was integrated with the trapezoidal algorithm. 1000 points (10 x 10 x 10) were interpolated to calculate the average.

   iii) All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

d. Re-measurements of the SAR value at the same location as in step a. above. If the value changed by more than 5 %, the evaluation was repeated.

2.5 Test Results

The results on the following page(s) were obtained when the device was tested in the condition described in this report. Detail measurement data and plots, which reveal information about the location of the maximum SAR with respect to the device, are reported in Appendix A.

Measurement Results

Trade Name:	Samsung	**Model No.:**	SGH-N625
Serial No.:	Not Labeled	**Test Engineer:**	Suresh Kondapalli

TEST CONDITIONS			
Ambient Temperature	23.5 °C	**Relative Humidity**	55 %
Liquid Temperature	22°C ± 0.5 °C	**Liquid depth**	14.8 cm
Test Signal Source	Test Mode	**Signal Modulation**	GSM
Output Power Before SAR Test	See Page 6	**Output Power After SAR Test**	Changes within ±0.2dB
Test Duration	20 Min. each test	**Number of Battery Change**	New battery for every scan

Brain 1800 MHz Band					
Plot No	**Frequency MHz**	**Operating Mode**	**Crest Factor**	**Position**	**Measured SAR_{1g} (mW/g)**
1	1850	GSM	8	Left Hand, Cheek Position	0.490
2	1850	GSM	8	Left Hand, Tilt Position	1.21
3	1880	GSM	8	Left Hand, Cheek Position	1.07
4	1880	GSM	8	Left Hand, Tilt Position	1.00
5	1910	GSM	8	Left Hand, Cheek Position	0.430
6	1910	GSM	8	Left Hand, Tilt Position	1.06
7	1850	GSM	8	Right Hand, Cheek Position	0.613
8	1850	GSM	8	Right Hand, Tilt Position	1.07
9	1880	GSM	8	Right Hand, Cheek Position	0.444
10	1880	GSM	8	Right Hand, Tilt Position	0.877
11	1910	GSM	8	Right Hand, Cheek Position	0.431
12	1910	GSM	8	Right Hand, Tilt Position	0.875

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Muscle 1800 MHz Band					
Plot No	**Frequency MHz**	**Operating Mode**	**Crest Factor**	**Position**	**Measured SAR_{1g} (mW/g)**
13	1850	GSM	8	Touching Phantom Position	0.860
14	1880	GSM	8	Touching Phantom Position	0.975
15	1910	GSM	8	Touching Phantom Position	1.09

Dipole, System Verification					
Frequency MHz	**Operating Mode**	**Crest Factor**	**Measured SAR_{1g} (mW/g)**	**Measured SAR_{10g} (mW/g)**	**Plot Number**
1800	CW	1	9.60	5.13	16

Note: a) Worst case data were reported
b) Duty cycle factor included in the measured SAR data
c) Uncertainty of the system is not included

3.0 TEST EQUIPMENT

3.1 Equipment List

The Specific Absorption Rate (SAR) tests were performed with the SPEAG model DASY 3 automated near-field scanning system, which is a package, optimized for dosimetric evaluation of mobile radios [3].

The following major equipment/components were used for the SAR evaluations:

SAR Measurement System			
EQUIPMENT	**SPECIFICATIONS**	S/N #	LAST CAL. DATE
Robot	**Stäubi RX60L**	597412-01	N/A
	Repeatability: ± 0.025mm Accuracy: 0.806×10^{-3} degree Number of Axes: 6		
E-Field Probe	**ET3DV5**	1333	04/13/01
	Frequency Range: 10 MHz to 3 GHz Linearity: ± 0.2 dB Directivity: ± 0.1 dB in brain tissue Probe outer diameter: 6.5 mm Length: 34.5 cm Distance between the probe tip and the dipole center: 2.7 mm		
Data Acquisition	**DAE3**	317	N/A
	Measurement Range: 1µV to >200mV Input offset Voltage: < 1µV (with auto zero) Input Resistance: 200 M		
Phantom	**Generic Twin V3.0**	N/A	N/A
	Type: Generic Twin, Homogenous Shell Material: Fiberglass Thickness: 2 ± 0.1 mm Capacity: 20 liter Ear spacer: 4 mm (between EUT ear piece and tissue simulating liquid)		
Device holder	Non-conductive holder supplied with DASY3, dielectric constant less than 5.0	N/A	N/A
Simulated Tissue	**Mixture**	N/A	04/23/02
	Please see section 6.2 for details		
Power Meter	**HP 8900D** w/ 84811A sensor	3607U00673	08/08/01
	Frequency Range: 100kHz to 18 GHz Power Range: 300µW to 3W		

3.2 Brain Tissue Simulating Liquid

Brain Ingredients Frequency (1800 MHz)	
DGBE Diethylene Glycol	44.92%
Toniton X-100 (Polyethylene Glycol Mono) Ether	0.1%
Salt	0.18%
Water	54.8%

The dielectric parameters were verified prior to assessment using the HP 85070A dielectric probe kit and the HP 8753C network Analyzer. The dielectric parameters were:

Frequency (MHz)	e_r *	s *(mho/m)	r **(kg/m^3)
1880	40.9	1.35	1000

* *Worst case uncertainty of the HP 85070A dielectric probe kit*
** *Worst case assumption*

Muscle Ingredients Frequency (1800 MHz)	
Water	52.90 %
Salt	0.181%
DGBE Diethylene Glycol	44.92%
ton X-100 (Polyethylene Glycol Mono) Ether	0.1 %

The dielectric parameters were verified prior to assessment using the HP 85070A dielectric probe kit and the HP 8753C network Analyzer. The dielectric parameters were:

Frequency (MHz)	e_r*	s *(mho/m)	r **(kg/m$^{3)}$
1800	55.8	1.49	1000

* *Worst case uncertainty of the HP 85070A dielectric probe kit*
** *Worst case assumption*

3.3 E-Field Probe Calibration

Probes were calibrated by the manufacturer in the TEM cell ifi 110. To ensure consistency, a strict protocol was followed. The conversion factor (ConF) between this calibration and the measurement in the tissue simulation solution was performed by comparison with temperature measurement and computer simulations. Probe calibration factors are included in Appendix C.

3.4 Measurement Uncertainty

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 %**

3.5 Measurement Tractability

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

4.0 WARNING LABEL INFORMATION - USA

See Users Manual.

5.0 REFERENCES

1] ANSI, *ANSI/IEEE C95.1-1991: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300 GHz*, The Institute of electrical and Electronics Engineers, Inc., New York, NY 10017, 1992

[2] Federal Communications Commission, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields", OET Bulletin 65, FCC, Washington, D.C. 20554, 1997

[3] Thomas Schmid, Oliver Egger, and Niels Kuster, "Automated E-field scanning system for dosimetric assessments", *IEEE Transaction on Microwave Theory and Techniques*, vol. 44, pp. 105-113, Jan. 1996.

[4] Niels Kuster, Ralph Kastle, and Thomas Schmid, "Dosimetic evaluation of mobile communications equipment with know precision", IEICE Transactions on Communications, vol. E80-B, no. 5, pp.645-652, May 1997.

5] NIS81, NAMAS, "The treatment of uncertainty in EMC measurement", Tech. Rep., NAMAS Executive, National Physical Laboratory, Teddinton, Middlesex, England, 1994.

6] Barry N. Tayor and Chris E. Kuyatt, "Guidelines for evaluating and expressing the uncertainty of NIST measurement results", Tech. Rep., National Institute of Standards and Technology, 1994.

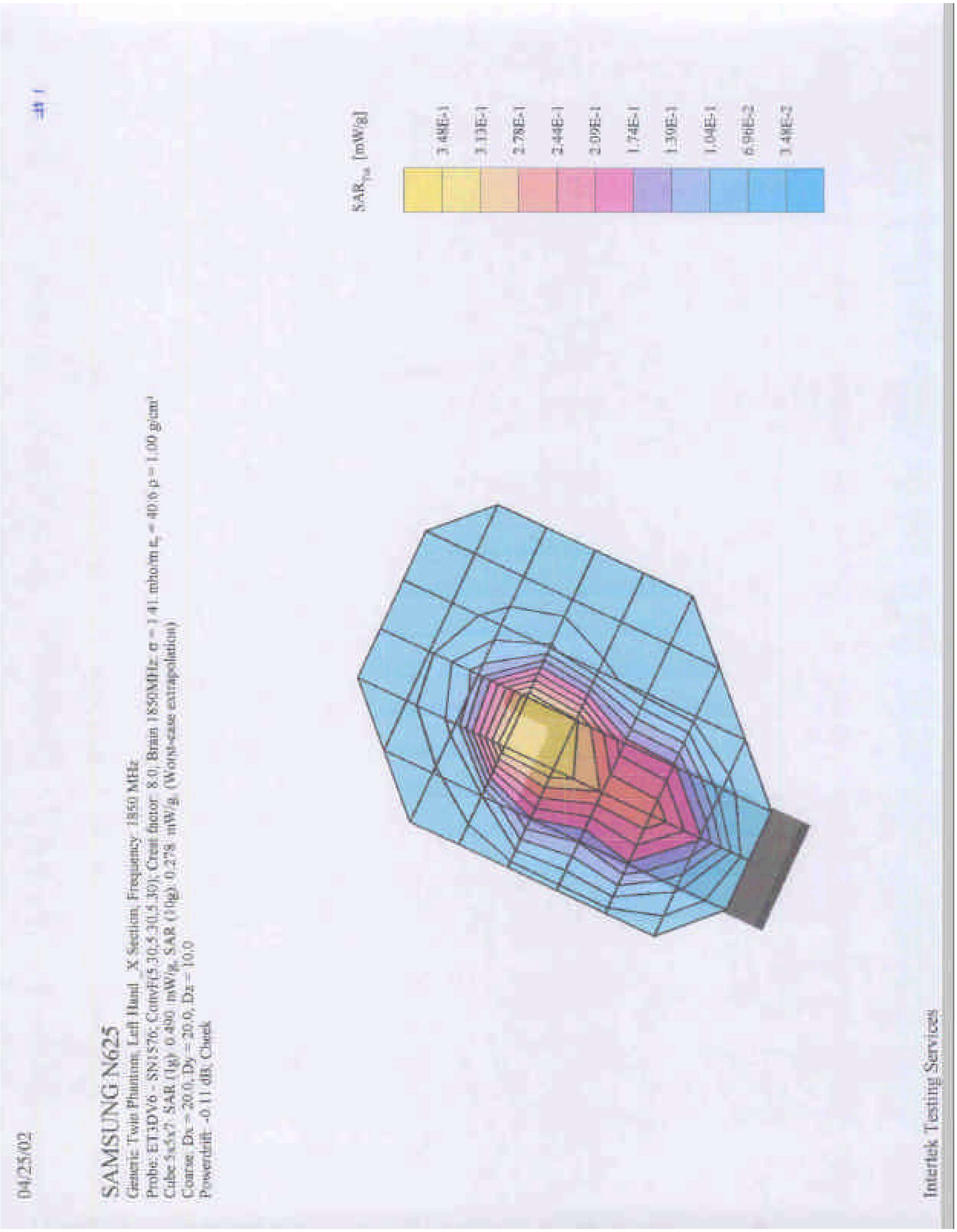
5.0 DOCUMENT HISTORY

Revision/ Job Number	Writer Initials	Date	Change
1.0 /3024181	SS	April 27, 2002	Original document

APPENDIX A - SAR Evaluation Data

Please note that the graphical visualization of the phone position onto the SAR distribution gives only limited information on the current distribution of the device, since the curvature of the head results in graphical distortion. Full information can only be obtained either by H-field scans in free space or SAR evaluation with a flat phantom.

Powerdrift is the measurement of power drift of the device over one complete SAR scan.


04/25/02
SAMSUNG N625
Generic Twin Phantom; Left Hand _X Section; Frequency: 1850 MHz
Probe: ET3DV6 - SN1576; ConvF(5.30,5.30,5.30); Crest factor: 8.0; Brain 1850MHz: σ = 1.41 mho/m εr = 40.0 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.400 mW/g, SAR (10g): 0.278 mW/g (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.11 dB; Cheek
SAR_Tot [mW/g]
3.48E-1
3.13E-1
2.78E-1
2.44E-1
2.09E-1
1.74E-1
1.39E-1
1.04E-1
6.96E-2
3.48E-2
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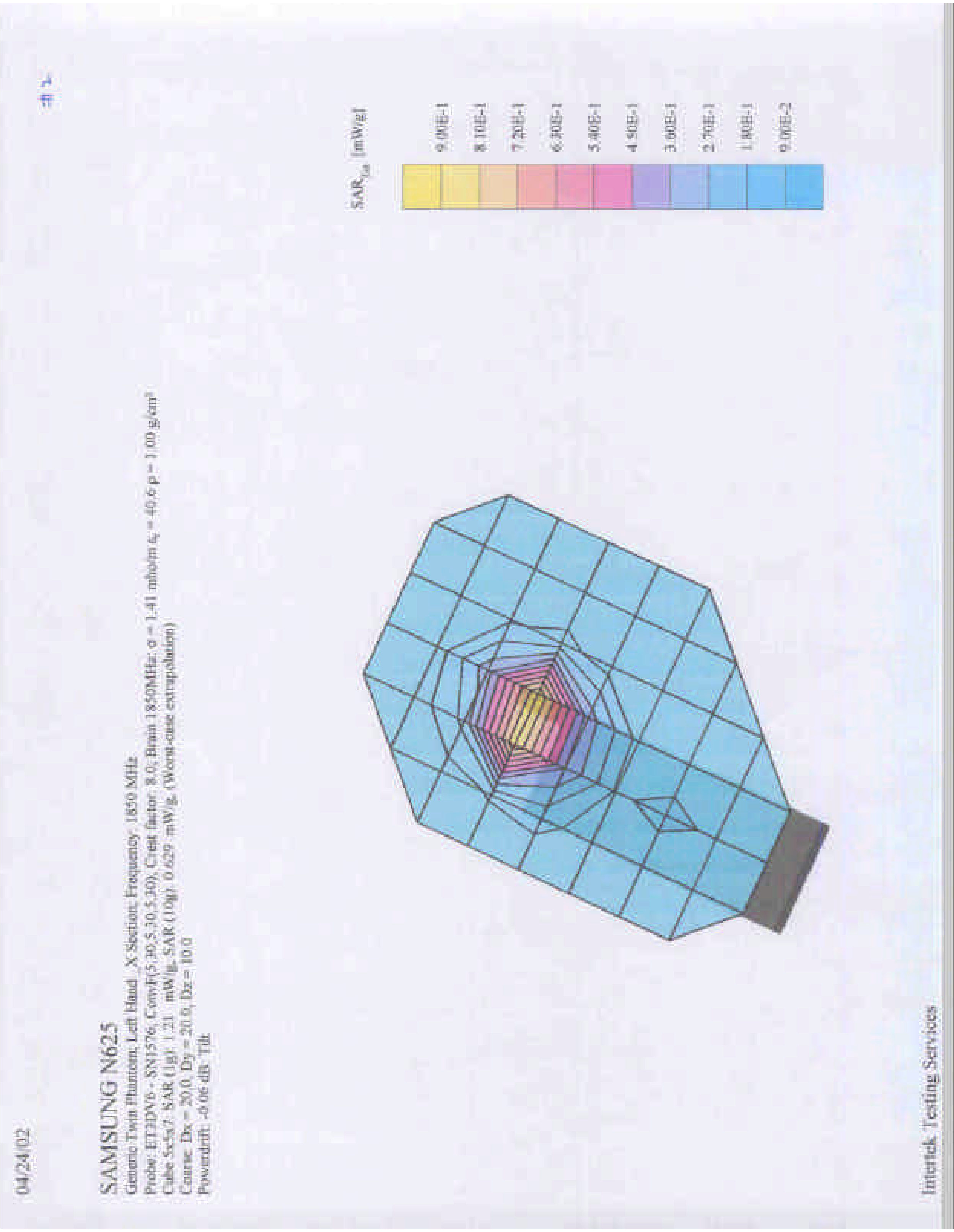

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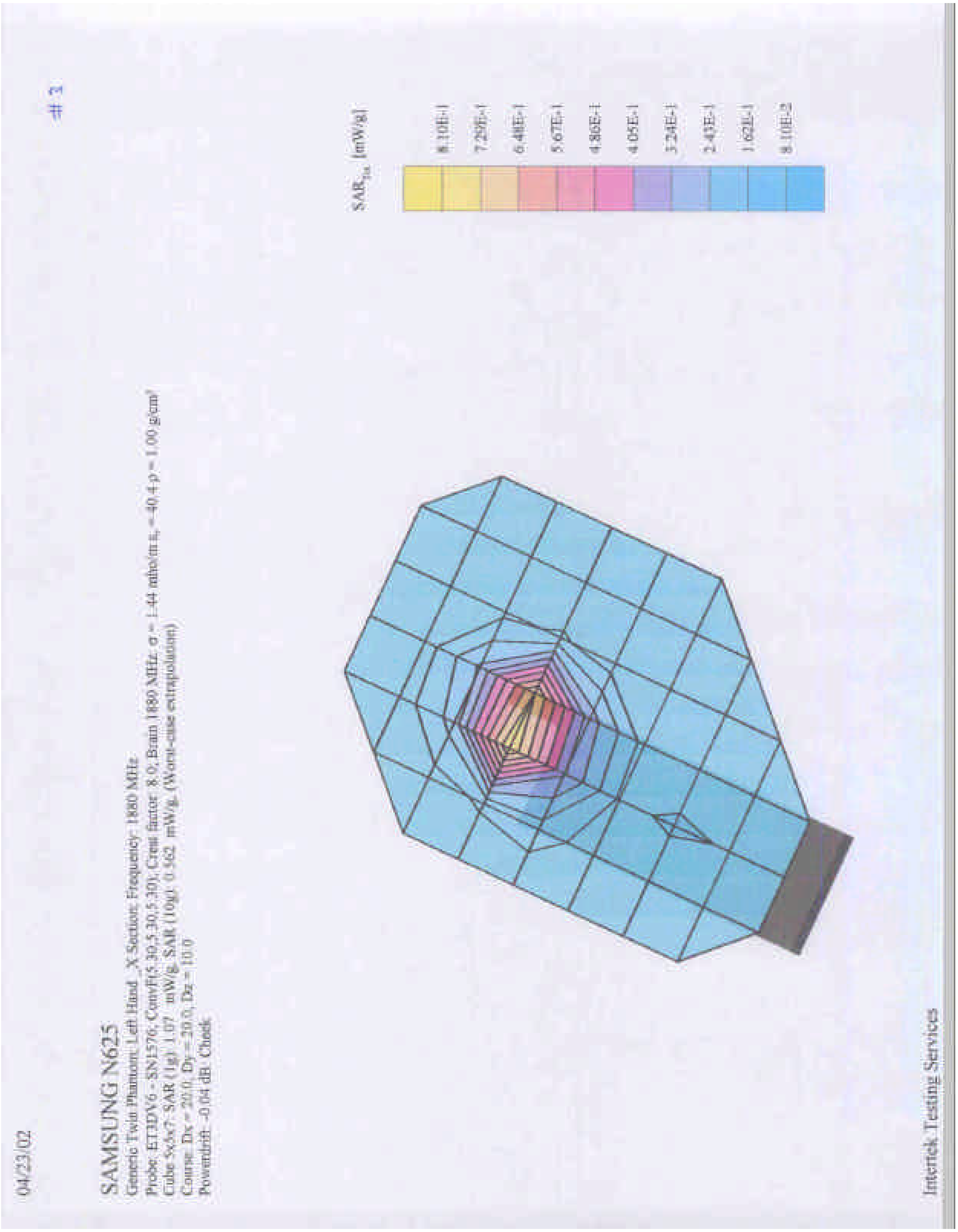

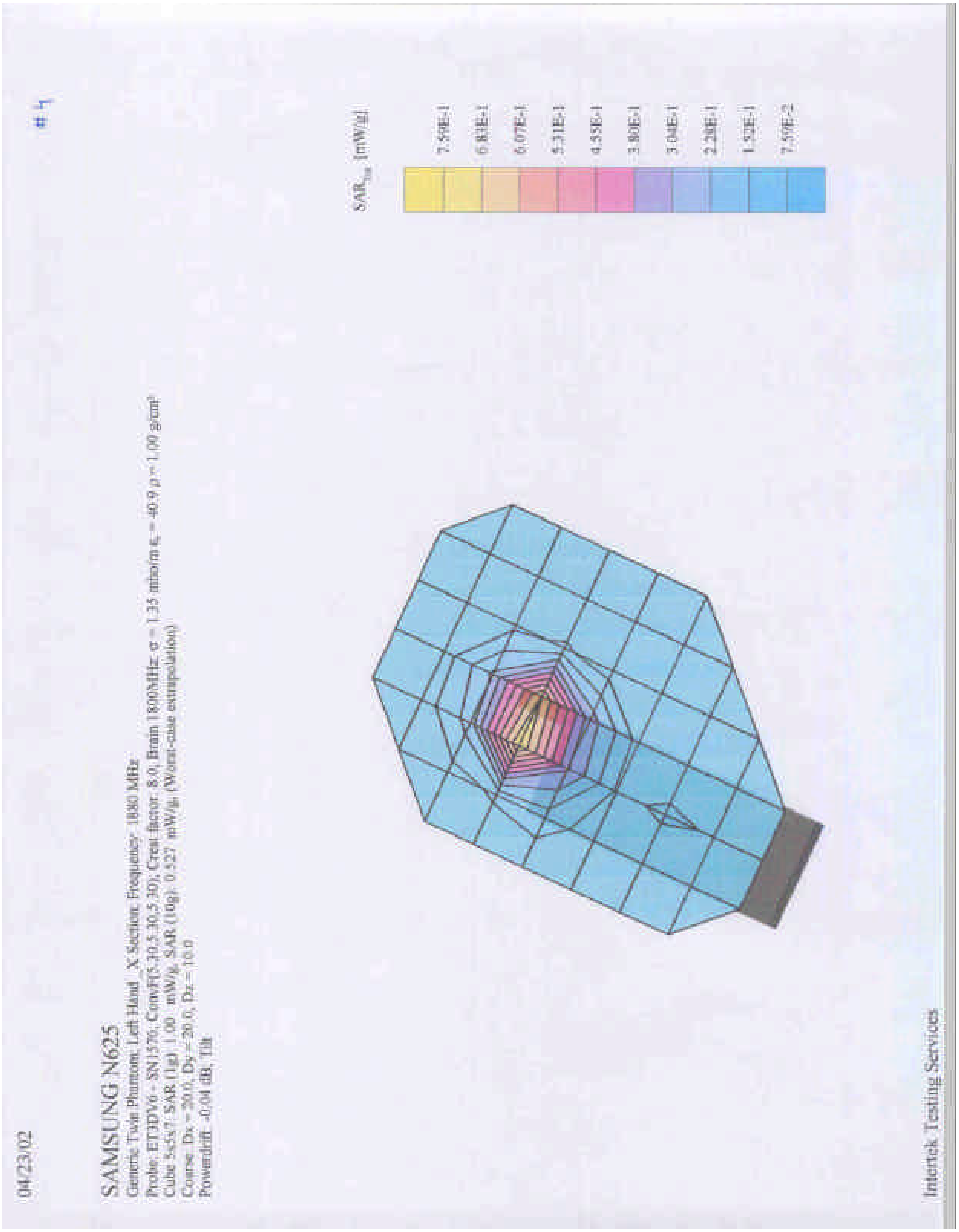
04/23/02
4
SAMSUNG N625
Generic Twin Phantom; Left Hand _X Section; Frequency: 1880 MHz
Probe: ET3DV6 - SN1576; ConvF(5.30,5.30,5.30); Crest factor: 8.0; Brain 1800MHz: σ = 1.35 mho/m ε = 40.9 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.00 mW/g, SAR (10g): 0.527 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.04 dB, Tilt
SAR [mW/g]
7.59E-1
6.83E-1
6.07E-1
5.31E-1
4.55E-1
3.80E-1
3.04E-1
2.28E-1
1.52E-1
7.59E-2
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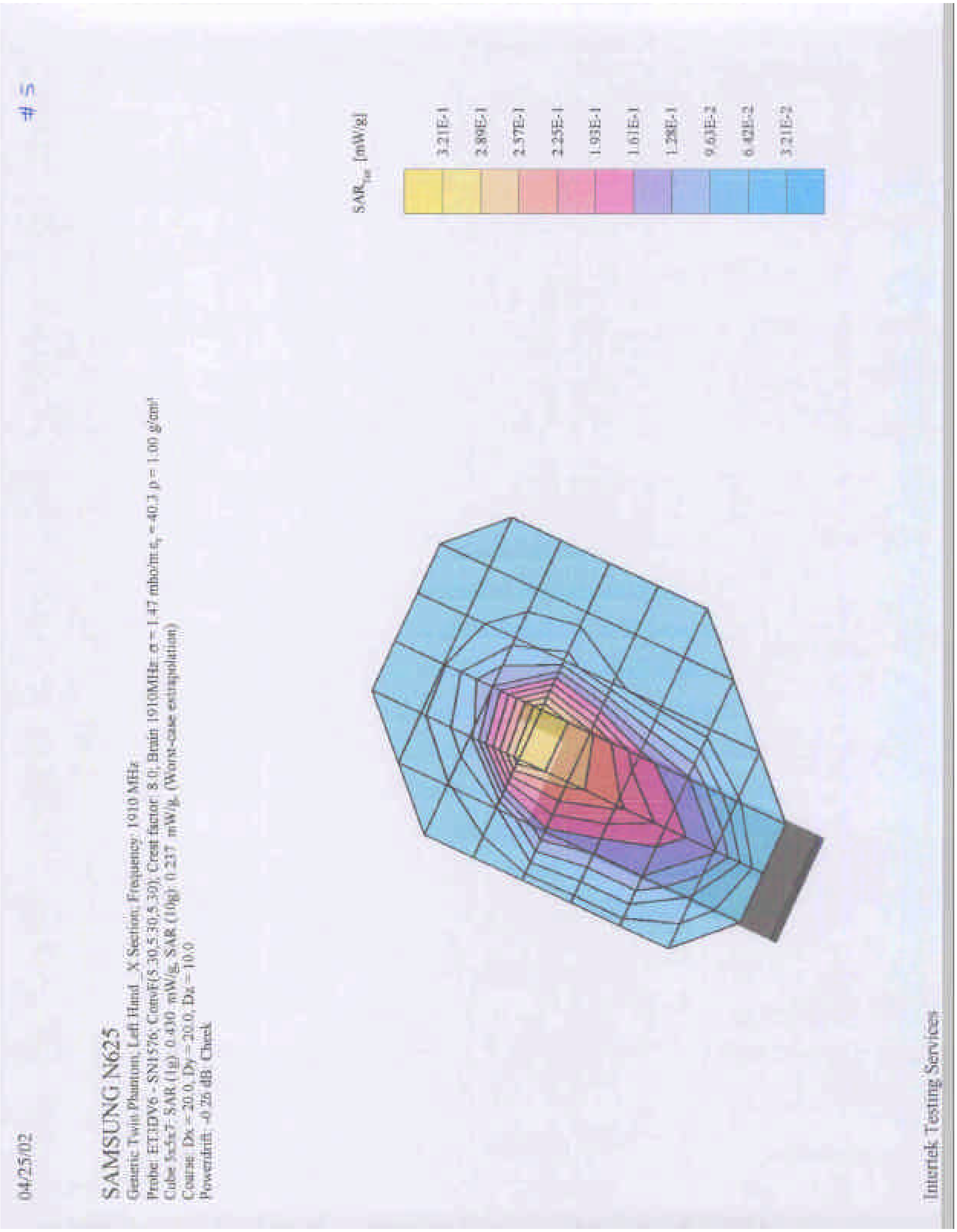
#5
04/25/02
SAMSUNG N625
Generic Twin Phantom; Left Hand _X Section; Frequency: 1910 MHz
Probe: ET3DV6 - SN1576; ConvF(5.30,5.30,5.30); Crest factor: 8.0; Brain 1910MHz: σ = 1.47 mho/m ε_r = 40.3 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.430 mW/g, SAR (10g): 0.237 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.25 dB Check
SAR_Tot [mW/g]
3.21E-1
2.89E-1
2.57E-1
2.25E-1
1.93E-1
1.61E-1
1.28E-1
9.63E-2
6.42E-2
3.21E-2
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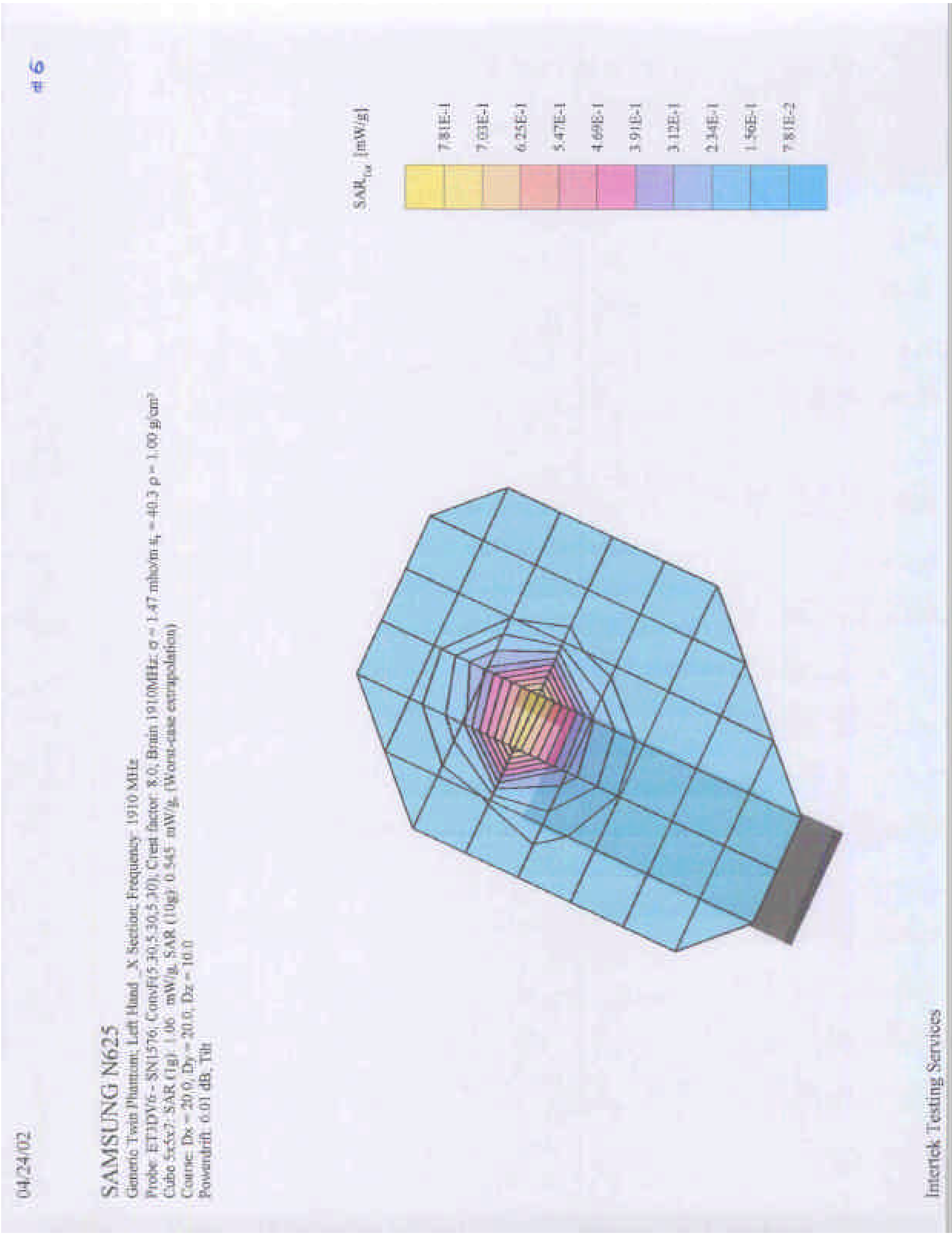
46
04/24/02
SAMSUNG N625
Generic Twin Phantom; Left Hand _X Section; Frequency: 1910 MHz
Probe: ET3DV6 - SN1576; ConvF(5.30,5.30,5.30); Crest factor: 8.0; Brain 1910MHz: σ = 1.47 mho/m εr = 40.3 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.06 mW/g, SAR (10g): 0.545 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.01 dB, Tilt
SAR_Tot [mW/g]
7.81E-1
7.03E-1
6.25E-1
5.47E-1
4.69E-1
3.91E-1
3.12E-1
2.34E-1
1.56E-1
7.81E-2
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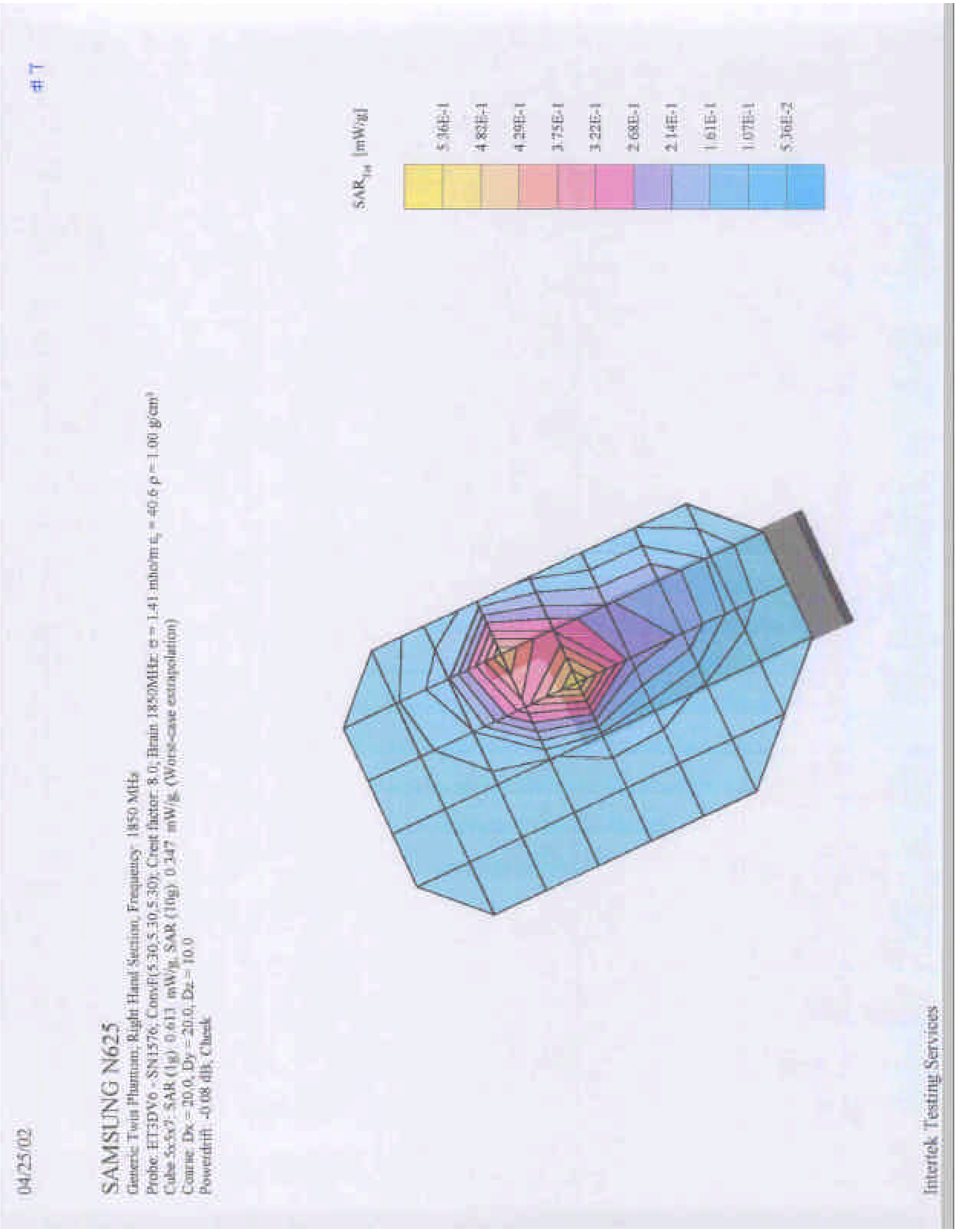
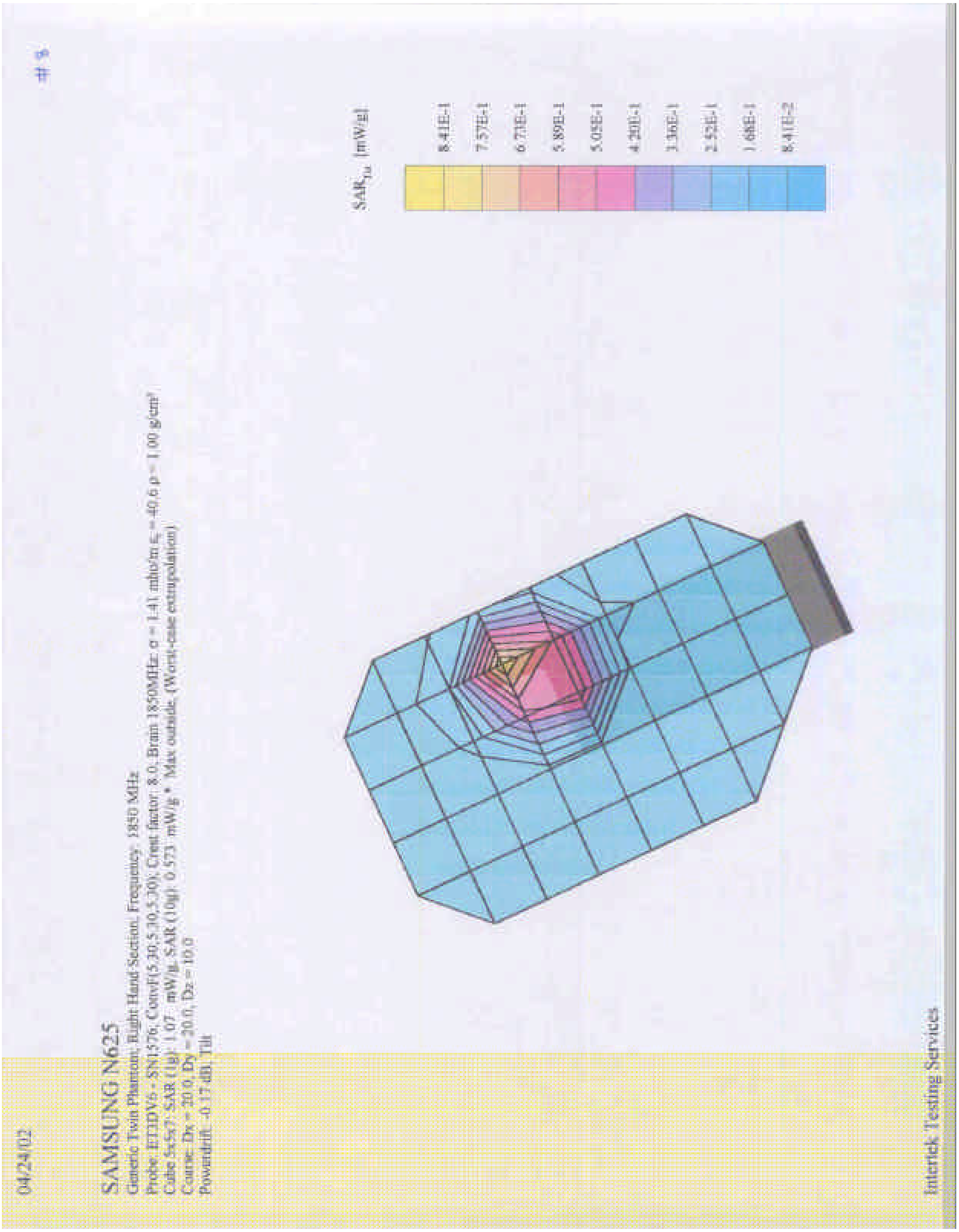
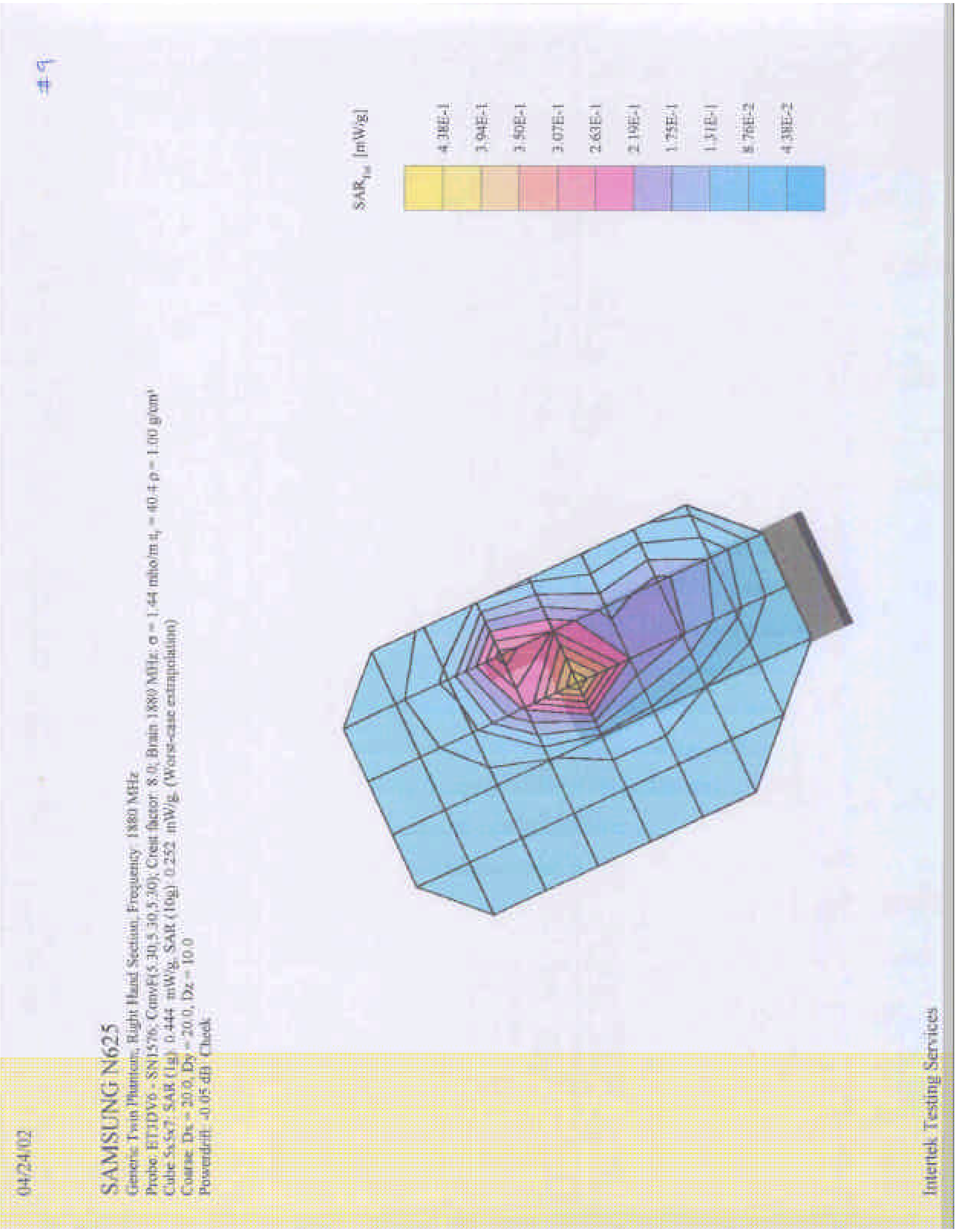
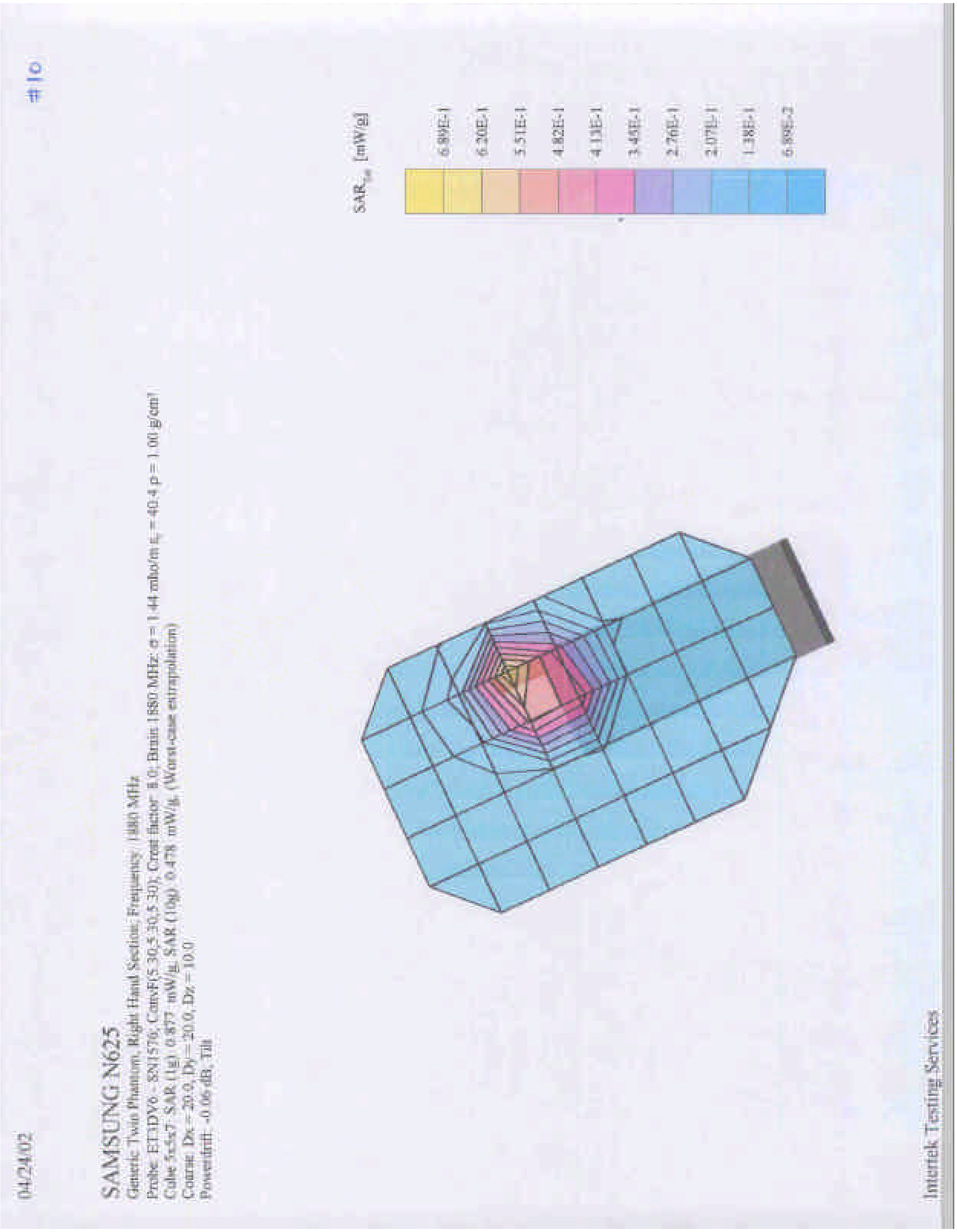
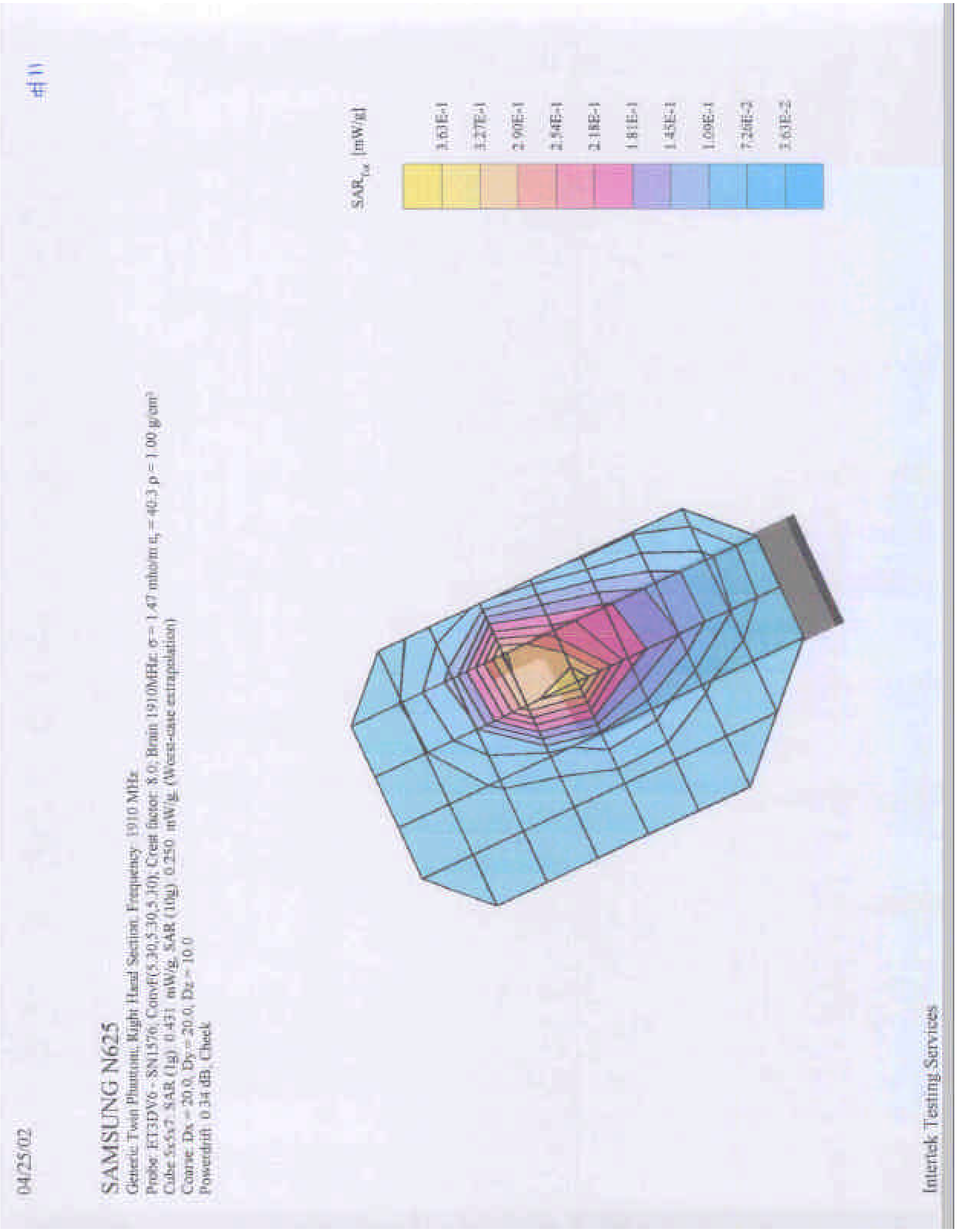

04/25/02
SAMSUNG N625
Generic Twin Phantom; Right Hand Section; Frequency: 1850 MHz
Probe: ET3DV6 - SN1576; ConvF(5.30,5.30,5.30); Crest factor: 8.0; Brain 1850MHz
Cube 5x5x7: SAR (1g): 0.613 mW/g, SAR (10g): 0.347 mW/g (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.08 dB; Check
SAR [mW/g]
5.36E-1
4.83E-1
4.29E-1
3.75E-1
3.22E-1
2.68E-1
2.14E-1
1.61E-1
1.07E-1
5.36E-2
Intertek Testing Services

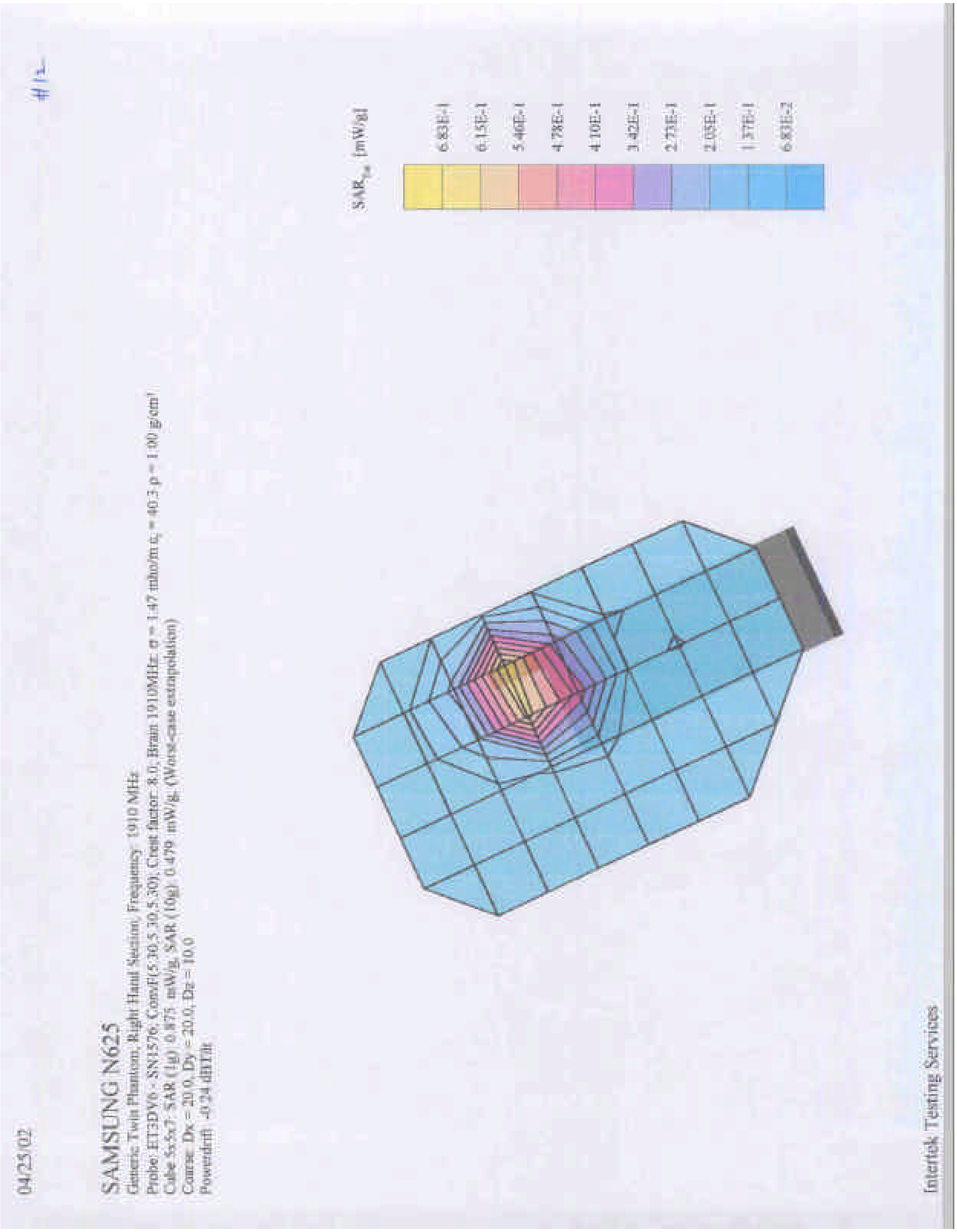
Samsung Electronics CO., LTD, Model No: SGH-N625 Date of Test: April 23 to 26, 2002
FCC ID: A3LSGH-N625




04/24/02
SAMSUNG N625
Generic Twin Phantom; Right Hand Section; Frequency: 1880 MHz
Probe: ET3DV6 - SN1576; ConvF(5.30,5.30,5.30); Crest factor: 8.0; Brain 1880 MHz: σ = 1.44 mho/m εr = 40.4 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.444 mW/g, SAR (10g): 0.252 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.05 dB, Check
SAR_Tot [mW/g]
4.38E-1
3.94E-1
3.50E-1
3.07E-1
2.63E-1
2.19E-1
1.75E-1
1.31E-1
8.76E-2
4.38E-2
Intertek Testing Services

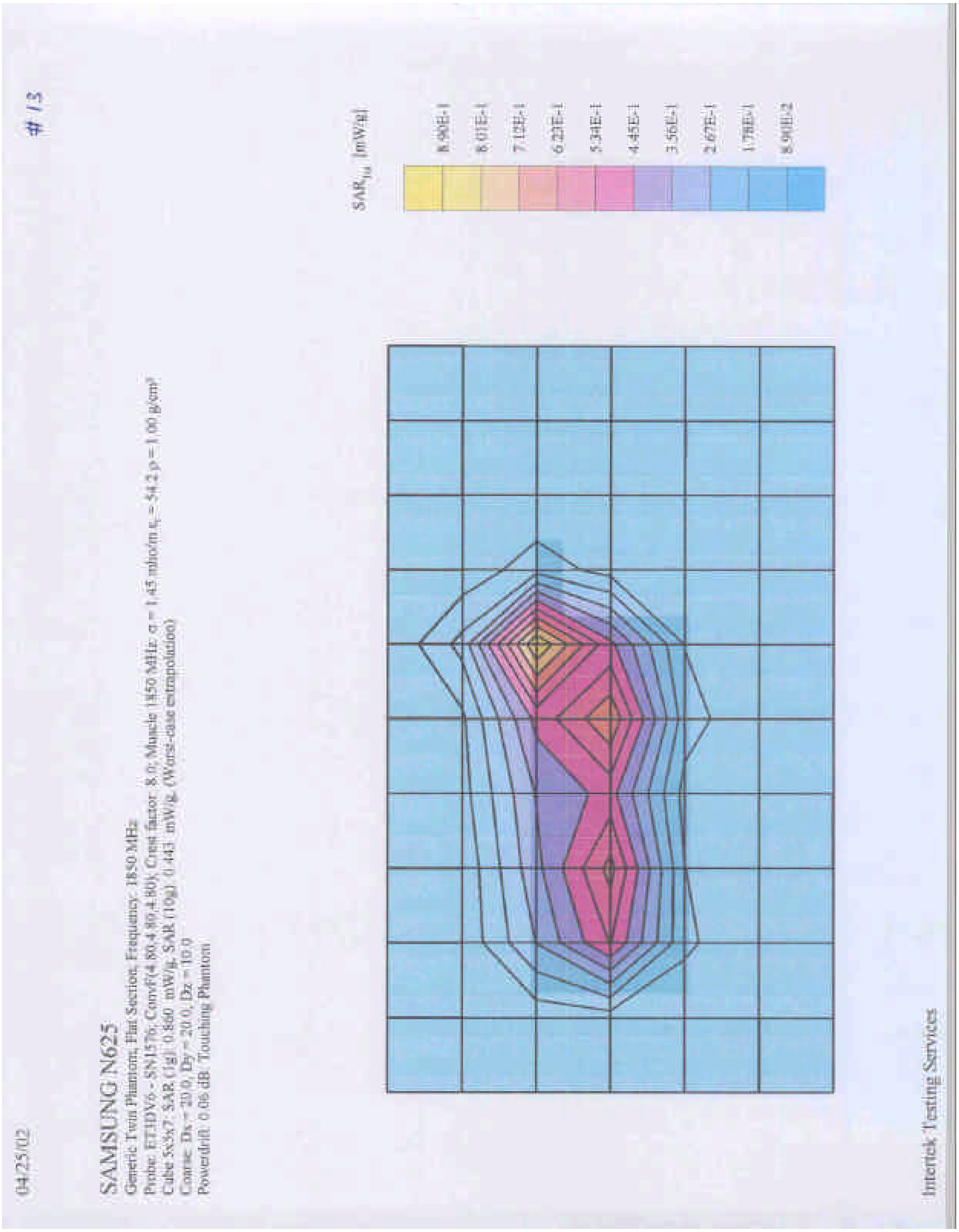

04/24/02
SAMSUNG N625
Generic Twin Phantom; Right Hand Section; Frequency: 1880 MHz
Probe: ET3DV6 - SN1576; ConvF(5.30,5.30,5.30); Crest factor: 8.0; Brain 1880 MHz: σ = 1.44 mho/m ε_r = 40.4 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.877 mW/g, SAR (10g): 0.478 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.06 dB, Tilt
#10
SAR_Tot [mW/g]
6.89E-1
6.20E-1
5.51E-1
4.82E-1
4.13E-1
3.45E-1
2.76E-1
2.07E-1
1.38E-1
6.89E-2
Intertek Testing Services

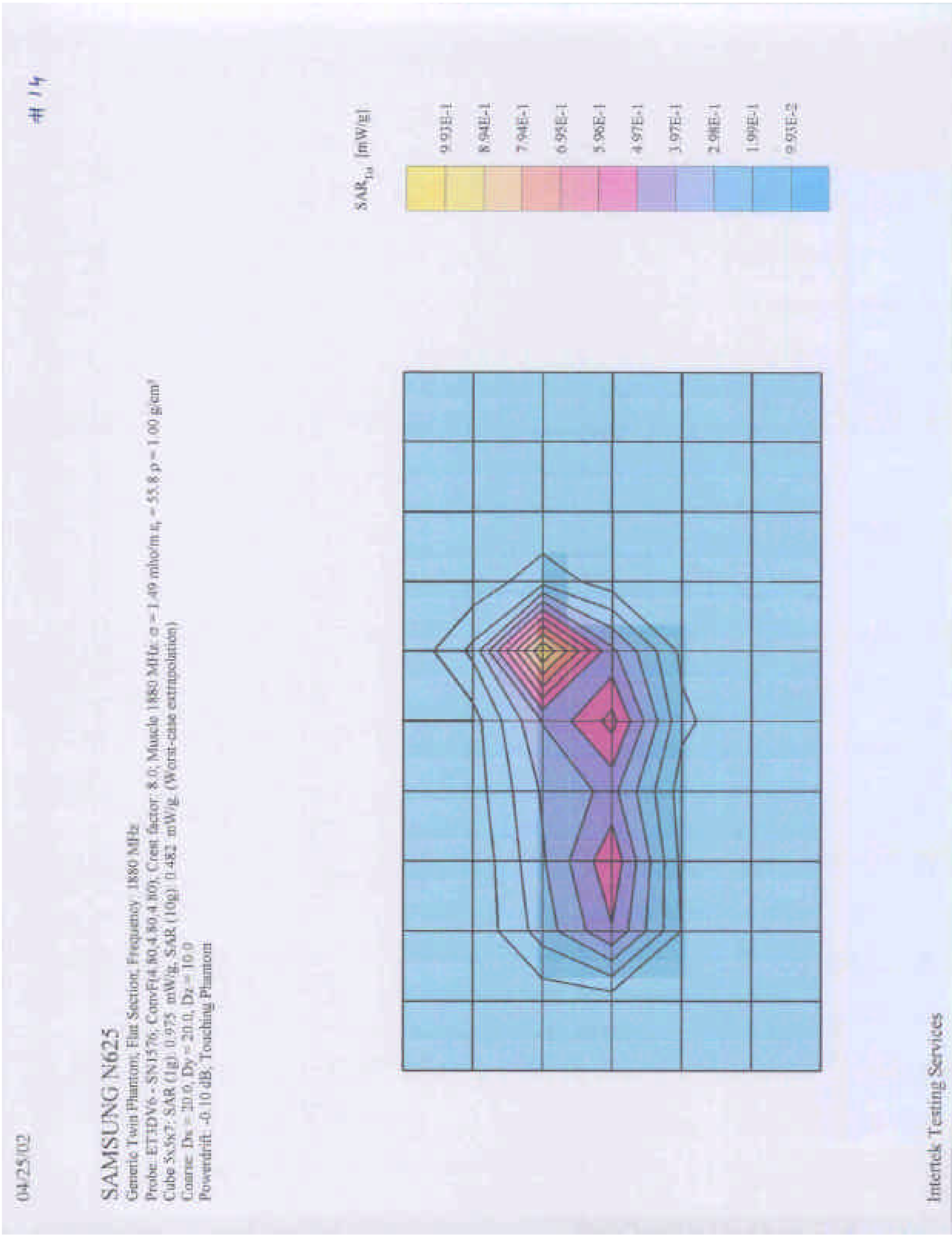

#11
04/25/02
SAMSUNG N625
Generic Twin Phantom; Right Hand Section; Frequency: 1910 MHz
Probe: ET3DV6 - SN1576; ConvF(5.30,5.30,5.30); Crest factor: 8.0; Brain 1910MHz: σ = 1.47 mho/m εr = 40.3 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.431 mW/g, SAR (10g): 0.250 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.34 dB, Check
SAR_Tot [mW/g]
3.63E-1
3.27E-1
2.90E-1
2.54E-1
2.18E-1
1.81E-1
1.45E-1
1.09E-1
7.26E-2
3.63E-2
Intertek Testing Services

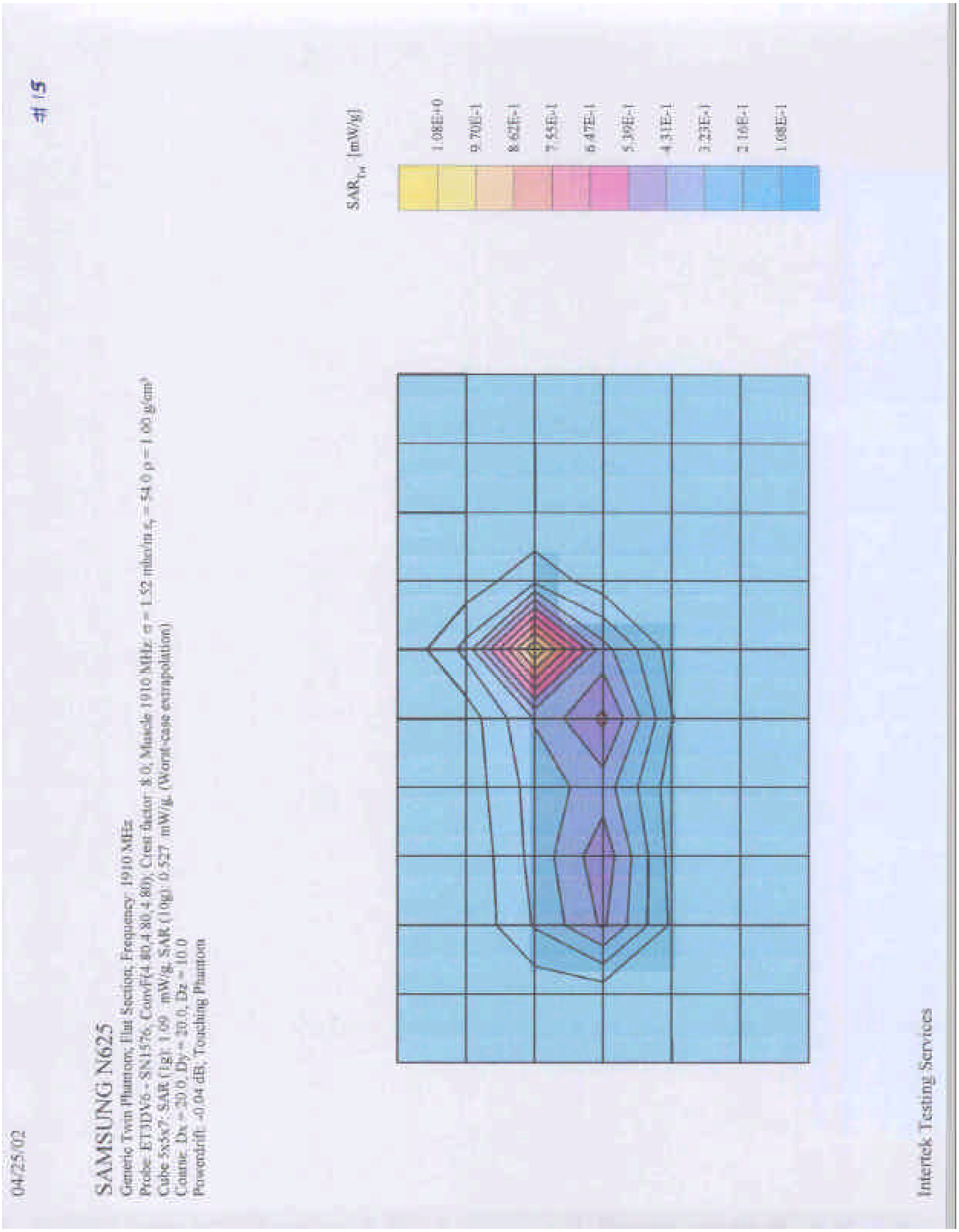

04/25/02
SAMSUNG N625
Generic Twin Phantom; Right Hand Section; Frequency: 1910 MHz
Probe: ET3DV6 - SN1576; ConvF(5.30,5.30,5.30); Crest factor: 8.0; Brain 1910MHz: σ = 1.47 mho/m εr = 40.3 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.875 mW/g, SAR (10g): 0.479 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.24 dB
SAR Tot [mW/g]
6.83E-1
6.15E-1
5.46E-1
4.78E-1
4.10E-1
3.42E-1
2.73E-1
2.05E-1
1.37E-1
6.83E-2
Intertek Testing Services

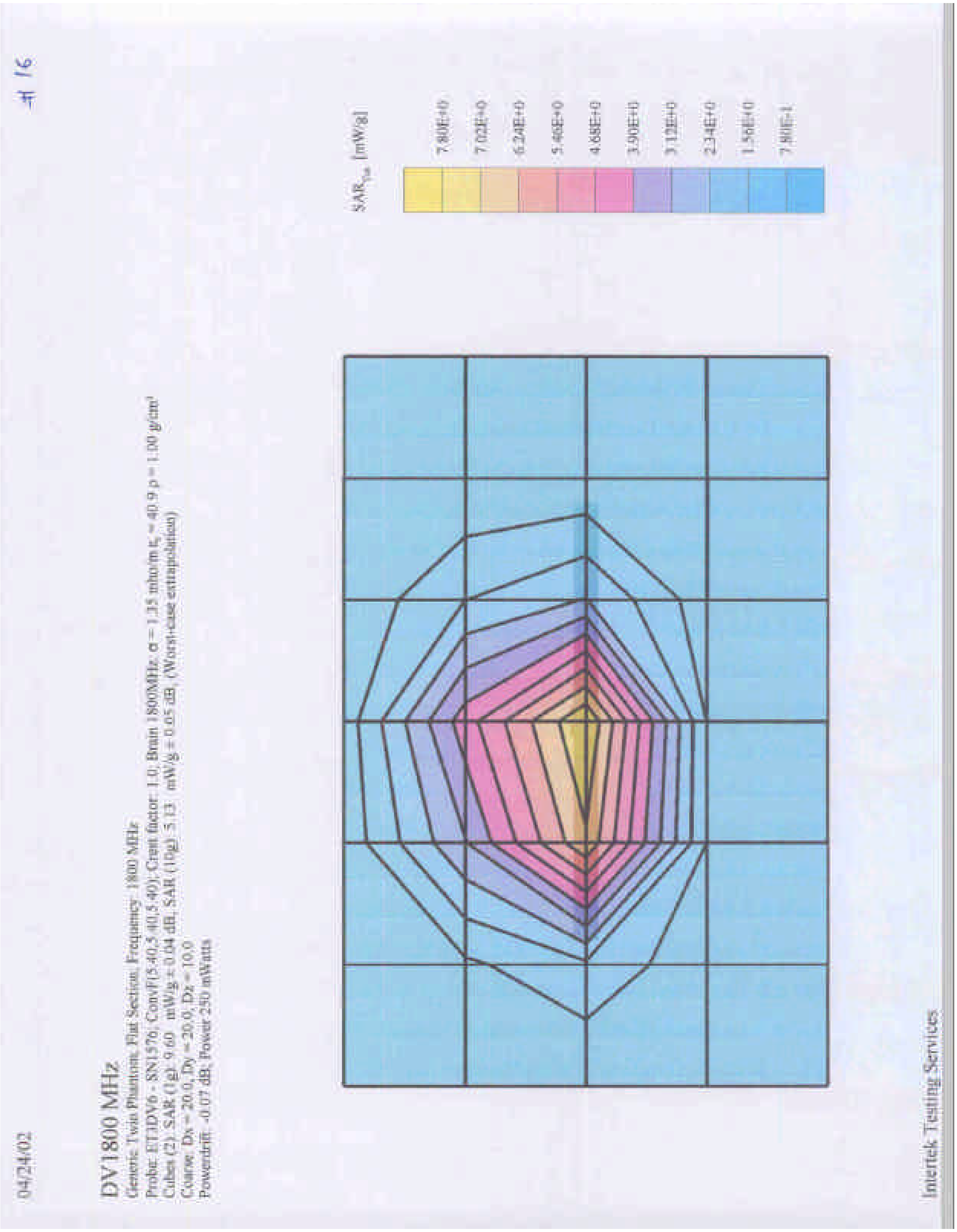
Samsung Electronics CO., LTD, Model No: SGH-N625
FCC ID: A3LSGH-N625

Date of Test: April 23 to 26, 2002




#14
04/25/02
SAMSUNG N625
Generic Twin Phantom; Flat Section; Frequency: 1880 MHz
Probe: ET3DV6 - SN1576; ConvF(4.80,4.80,4.80); Crest factor: 8.0; Muscle 1880 MHz: σ = 1.49 mho/m εr = 55.8 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.975 mW/g, SAR (10g): 0.482 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.10 dB; Touching Phantom
SAR_Tot [mW/g]
9.93E-1
8.94E-1
7.94E-1
6.95E-1
5.96E-1
4.97E-1
3.97E-1
2.98E-1
1.99E-1
9.93E-2
Intertek Testing Services


04/25/02
#15
SAMSUNG N625
Generic Twin Phantom; Flat Section; Frequency: 1910 MHz
Probe: ET3DV6 - SN1576; ConvF(4.80,4.80,4.80); Crest factor: 8.0; Muscle 1910 MHz: σ = 1.52 mho/m εr = 54.0 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.09 mW/g, SAR (10g): 0.527 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.04 dB; Touching Phantom
SAR_Tot [mW/g]
1.08E+0
9.70E-1
8.62E-1
7.55E-1
6.47E-1
5.39E-1
4.31E-1
3.23E-1
2.16E-1
1.08E-1
Intertek Testing Services


#16
04/24/02
DV1800 MHz
Generic Twin Phantom; Flat Section; Frequency: 1800 MHz
Probe: ET3DV6 - SN1576; ConvF(5.40,5.40,5.40); Crest factor: 1.0; Brain 1800MHz: σ = 1.35 mho/m εr = 40.9 ρ = 1.00 g/cm³
Cubes (2): SAR (1g): 9.60 mW/g ± 0.04 dB, SAR (10g): 5.13 mW/g ± 0.05 dB, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.07 dB; Power 250 mWatts
SAR_Tot [mW/g]
7.80E+0
7.02E+0
6.24E+0
5.46E+0
4.68E+0
3.90E+0
3.12E+0
2.34E+0
1.56E+0
7.80E-1
Intertek Testing Services

APPENDIX B - E-Field Probe Calibration Data

See attached.

Schmid & Partner
Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

Calibration Certificate

Dosimetric E-Field Probe

Type:	**ET3DV6**
Serial Number:	**1576**
Place of Calibration:	**Zurich**
Date of Calibration:	**February 27, 2002**
Calibration Interval:	**12 months**

Schmid & Partner Engineering AG hereby certifies, that this device has been calibrated on the date indicated above. The calibration was performed in accordance with specifications and procedures of Schmid & Partner Engineering AG.

Wherever applicable, the standards used in the calibration process are traceable to international standards. In all other cases the standards of the Laboratory for EMF and Microwave Electronics at the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland have been applied.

Calibrated by:

Approved by:

Schmid & Partner
Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland, Telephone +41 1 245 97 00, Fax +41 1 245 97 79

Probe ET3DV6

SN:1576

Manufactured:	April 6, 2001
Last calibration:	April 20, 2001
Recalibrated:	February 27, 2002

Calibrated for System DASY3

ET3DV6 SN:1576 February 27, 2002

DASY3 - Parameters of Probe: ET3DV6 SN:1576

Sensitivity in Free Space

NormX	**1.77**	$\mu V/(V/m)^2$
NormY	**1.81**	$\mu V/(V/m)^2$
NormZ	**1.76**	$\mu V/(V/m)^2$

Diode Compression

DCP X	**98**	mV
DCP Y	**98**	mV
DCP Z	**98**	mV

Sensitivity in Tissue Simulating Liquid

Head 900 MHz $\varepsilon_r = 41.5 \pm 5\%$ $\sigma = 0.97 \pm 5\%$ mho/m
Head 835 MHz $\varepsilon_r = 41.5 \pm 5\%$ $\sigma = 0.90 \pm 5\%$ mho/m

ConvF X	**7.0** ± 9.5% (k=2)		Boundary effect:	
ConvF Y	**7.0** ± 9.5% (k=2)		Alpha	**0.30**
ConvF Z	**7.0** ± 9.5% (k=2)		Depth	**2.51**

Head 1800 MHz $\varepsilon_r = 40.0 \pm 5\%$ $\sigma = 1.40 \pm 5\%$ mho/m
Head 1900 MHz $\varepsilon_r = 40.0 \pm 5\%$ $\sigma = 1.40 \pm 5\%$ mho/m

ConvF X	**5.4** ± 9.5% (k=2)		Boundary effect:	
ConvF Y	**5.4** ± 9.5% (k=2)		Alpha	**0.45**
ConvF Z	**5.4** ± 9.5% (k=2)		Depth	**2.30**

Boundary Effect

Head 900 MHz Typical SAR gradient: 5 % per mm

Probe Tip to Boundary		**1 mm**	**2 mm**
SAR_{be} [%]	Without Correction Algorithm	7.6	4.3
SAR_{be} [%]	With Correction Algorithm	0.3	0.5

Head 1800 MHz Typical SAR gradient: 10 % per mm

Probe Tip to Boundary		**1 mm**	**2 mm**
SAR_{be} [%]	Without Correction Algorithm	9.7	6.6
SAR_{be} [%]	With Correction Algorithm	0.2	0.3

Sensor Offset

Probe Tip to Sensor Center	**2.7**	mm
Optical Surface Detection	**1.9 ± 0.2**	mm

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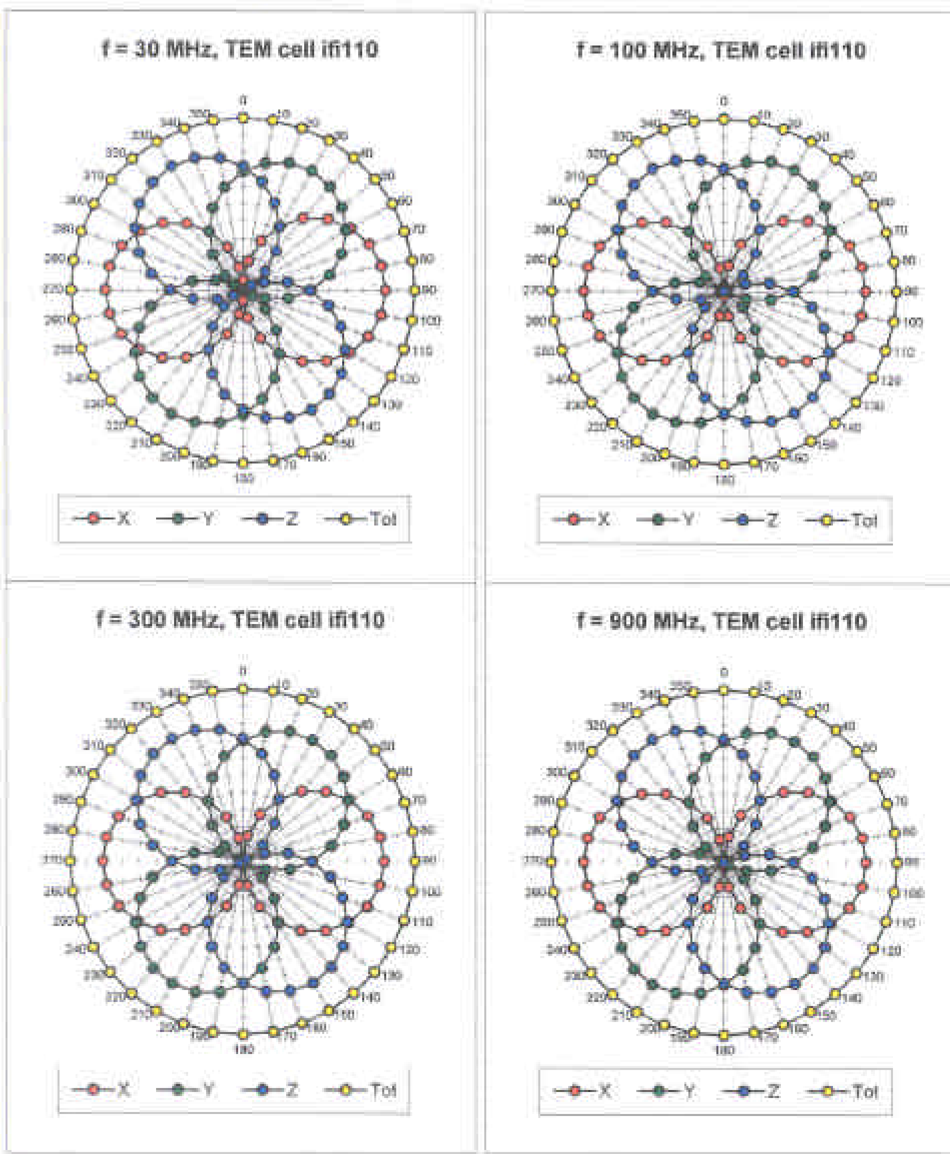
ET3DV6 SN:1576 February 27, 2002

Receiving Pattern (ϕ), θ = 0°



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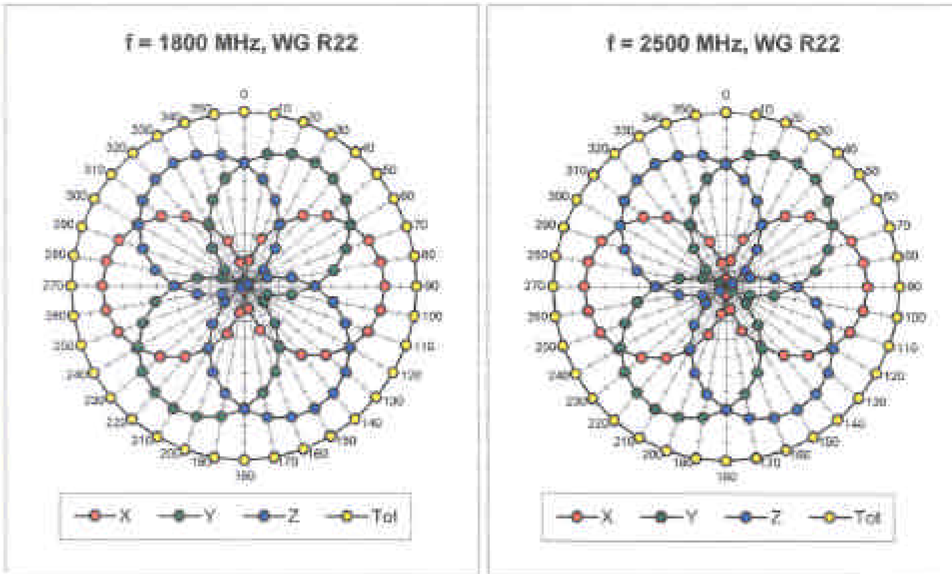
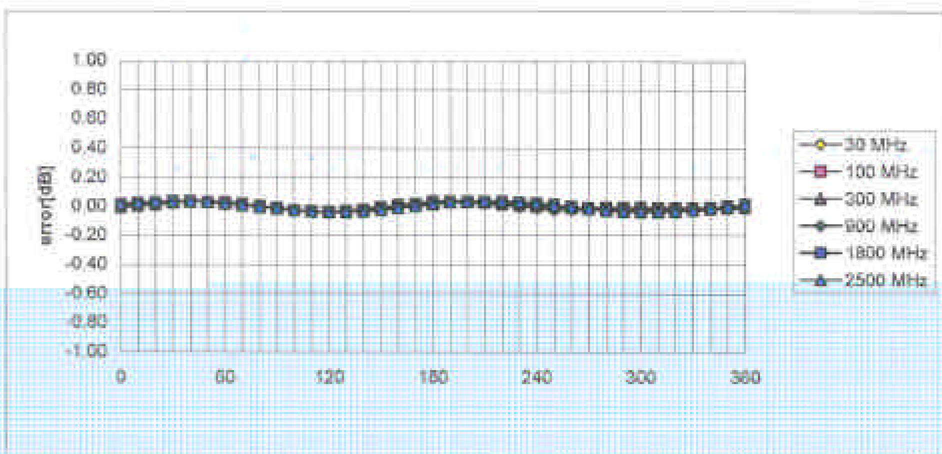
ET3DV6 SN:1576 February 27, 2002



Isotropy Error (φ), θ = 0°



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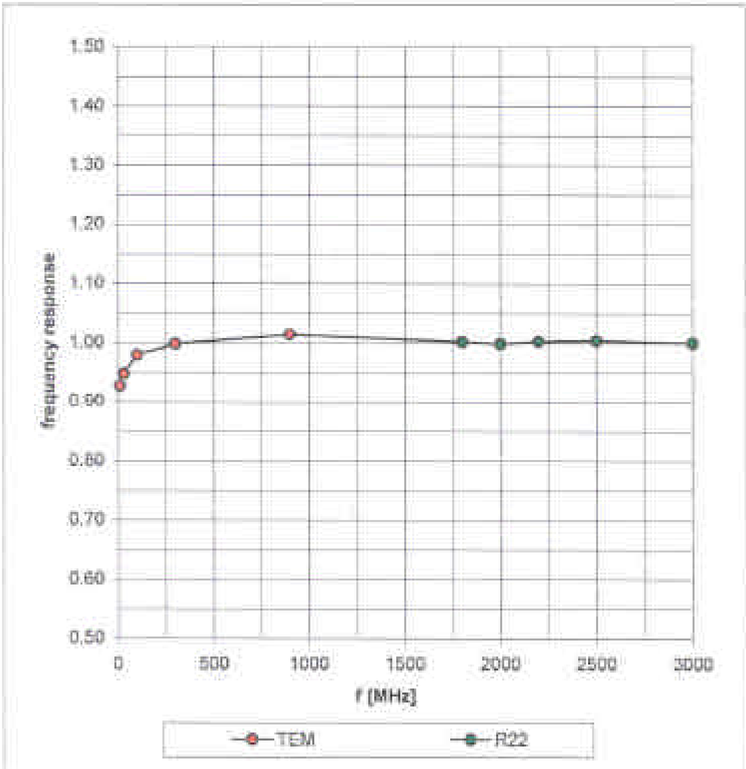
Frequency Response of E-Field

(TEM-Cell:ifi110, Waveguide R22)



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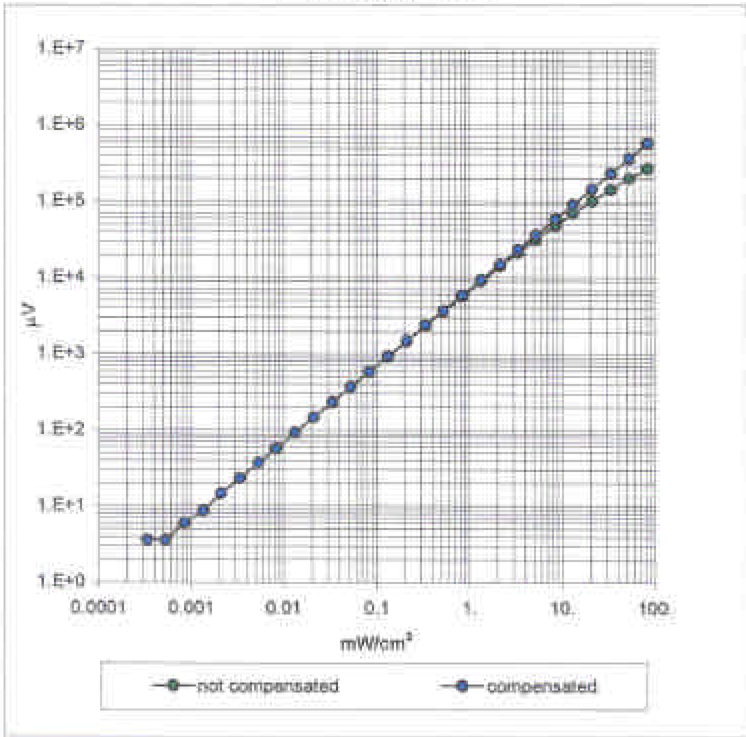
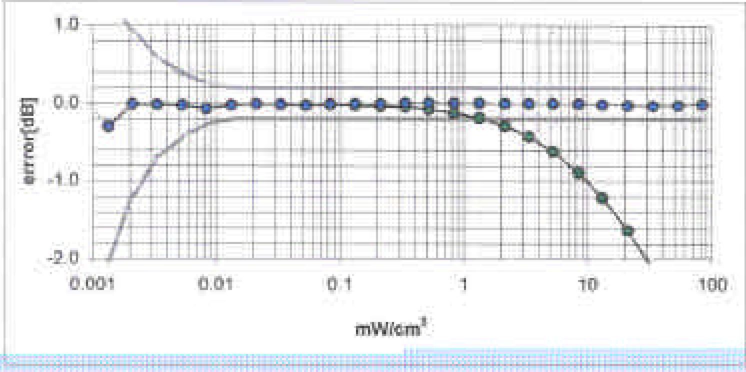
Dynamic Range f(SAR_{brain})

(Waveguide R22)





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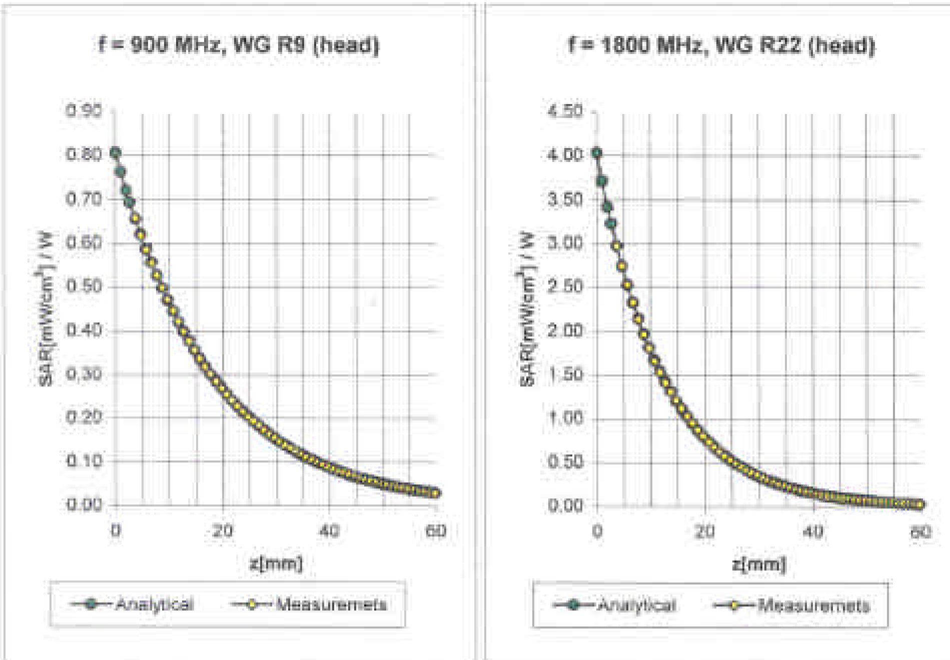
ET3DV6 SN:1576 February 27, 2002

Conversion Factor Assessment



Head	900 MHz	ε_r = 41.5 ± 5%		σ = 0.97 ± 5% mho/m	
Head	835 MHz	ε_r = 41.5 ± 5%		σ = 0.90 ± 5% mho/m	
	ConvF X	7.0	± 9.5% (k=2)	Boundary effect:	
	ConvF Y	7.0	± 9.5% (k=2)	Alpha	0.30
	ConvF Z	7.0	± 9.5% (k=2)	Depth	2.51

Head	1800 MHz	ε_r = 40.0 ± 5%		σ = 1.40 ± 5% mho/m	
Head	1900 MHz	ε_r = 40.0 ± 5%		σ = 1.40 ± 5% mho/m	
	ConvF X	5.4	± 9.5% (k=2)	Boundary effect:	
	ConvF Y	5.4	± 9.5% (k=2)	Alpha	0.45
	ConvF Z	5.4	± 9.5% (k=2)	Depth	2.30

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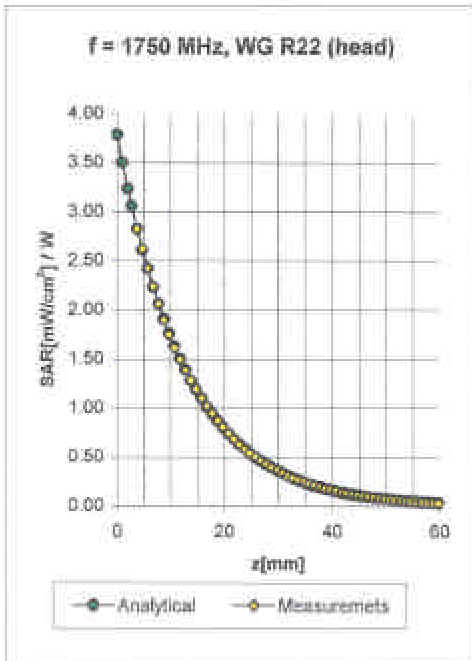
Conversion Factor Assessment



Head	1750 MHz	ε_r = 40.0 ± 5%	σ = 1.40 ± 5% mho/m

ConvF X	**5.4** ± 8.9% (k=2)	Boundary effect:	
ConvF Y	**5.4** ± 8.9% (k=2)	Alpha	**0.45**
ConvF Z	**5.4** ± 8.9% (k=2)	Depth	**2.27**

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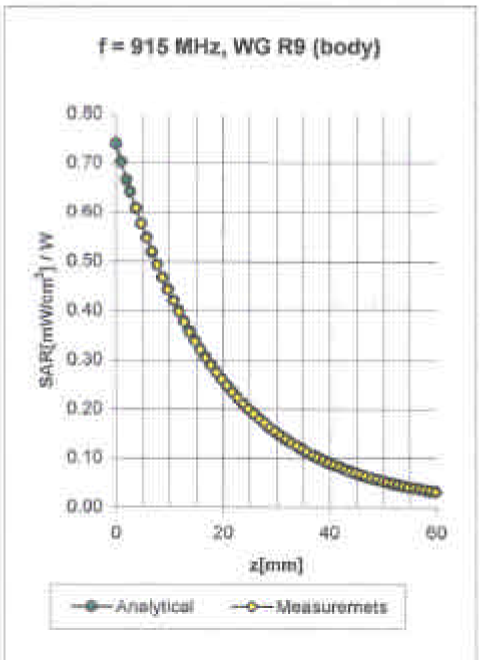
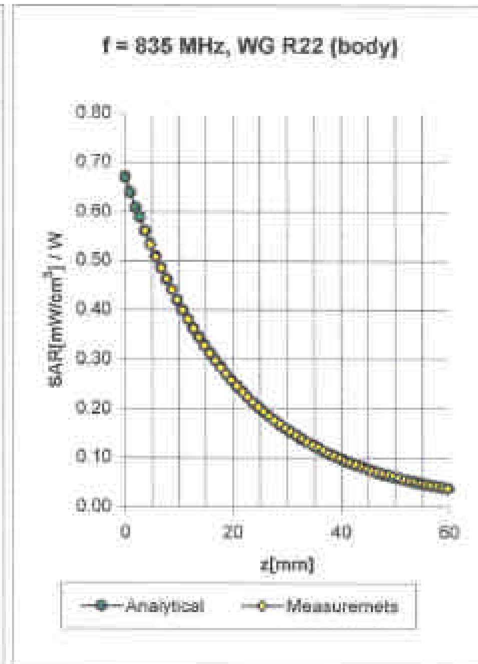
Conversion Factor Assessment





Body 915 MHz ε_r = 55.0 ± 5% σ = 1.06 ± 5% mho/m

ConvF X	**6.7**	± 8.9% (k=2)	Boundary effect:	
ConvF Y	**6.7**	± 8.9% (k=2)	Alpha	**0.45**
ConvF Z	**6.7**	± 8.9% (k=2)	Depth	**2.01**

Body 835 MHz ε_r = 55.2 ± 5% σ = 0.97 ± 5% mho/m

ConvF X	**6.7**	± 8.9% (k=2)	Boundary effect:	
ConvF Y	**6.7**	± 8.9% (k=2)	Alpha	**0.34**
ConvF Z	**6.7**	± 8.9% (k=2)	Depth	**2.37**

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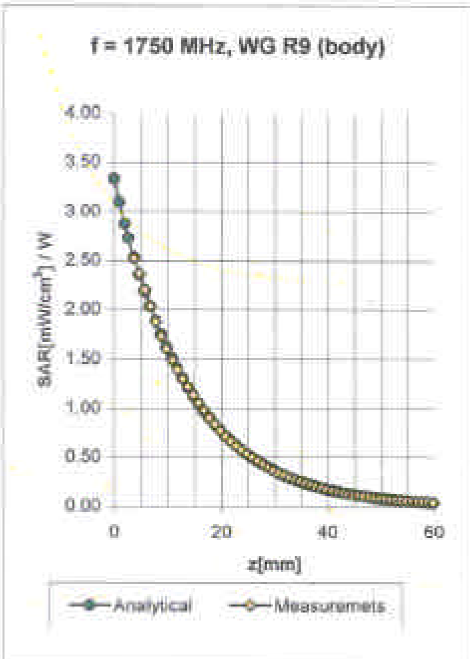
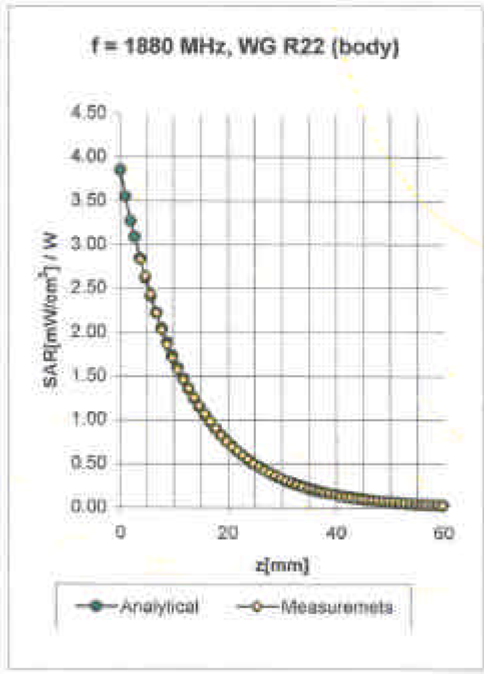
Conversion Factor Assessment





Body 1750 MHz ε_r = 53.3 ± 5% σ = 1.52 ± 5% mho/m

ConvF X	**5.1** ± 8.9% (k=2)		Boundary effect:	
ConvF Y	**5.1** ± 8.9% (k=2)		Alpha	**0.51**
ConvF Z	**5.1** ± 8.9% (k=2)		Depth	**2.31**

Body 1880 MHz ε_r = 53.3 ± 5% σ = 1.52 ± 5% mho/m

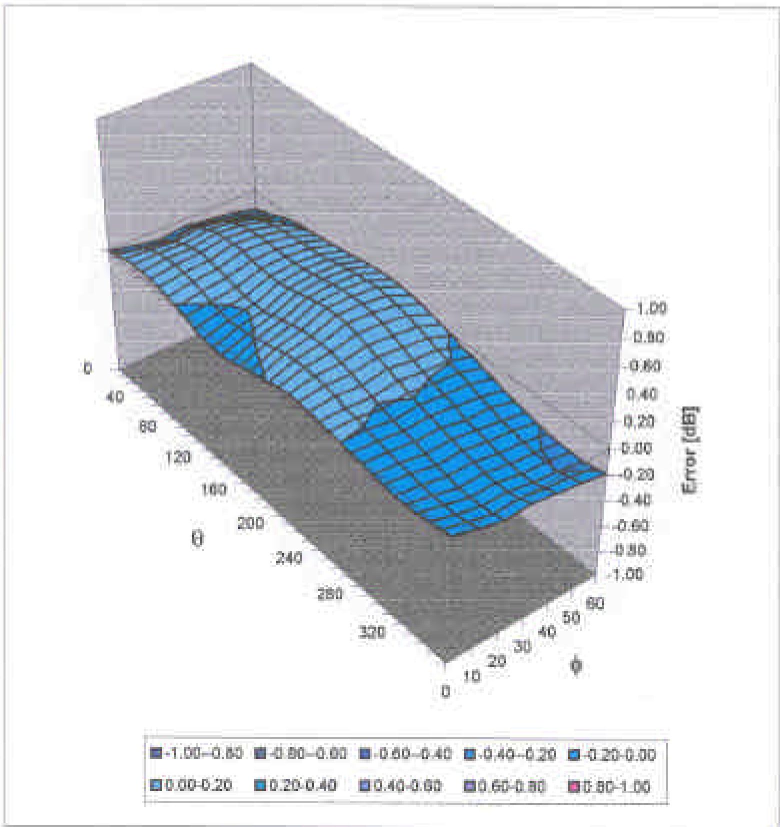
ConvF X	**4.8** ± 8.9% (k=2)		Boundary effect:	
ConvF Y	**4.8** ± 8.9% (k=2)		Alpha	**0.63**
ConvF Z	**4.8** ± 8.9% (k=2)		Depth	**2.10**

ET3DV6 SN:1576

February 27, 2002

Deviation from Isotropy in HSL

Error (θ,φ), f = 900 MHz



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