Specific Absorption Rate (SAR) Test Report
for
Cyberbank Corporation
on the
AMPS/CDMA Mobile Telephone
Model Number: CB-0800

Test Report: 20415841
Date of Report: February 28, 2001

Job #: J20041584
Date of Test: February 27, 2001

Total No of Pages Contained in this Report: 43 + Data Sheets

NVLAP Laboratory Code 200201-0
Accredited for testing to FCC Parts 15

Tested by:	Suresh Kondapalli
Reviewed by:	David Chernomordik,Ph.D., EMC Site Manager

Review Date:_____

1.0 Job description

1.1 Client Information

The Cybird (Smart Phone) has been tested at the request of

Company: Cyberbank Corporation
18th Floor, Mirage Bldg., 1306-6, Seocho-dong,
Seocho-gu, Seoul 137-070
Korea

Name of contact: Mr. Bo-Gyu
Na/Chief engineer
Telephone: 82-2-3483-4500

1.2 Equipment under test (EUT)

Product Descriptions:

Equipment	AMPS/CDMA Mobile Telephone		
Trade Name	Cybird	Model No:	CB-0800
FCC ID	N/A	S/N No.	N/A
Category		RF Exposure	Uncontrolled Environment
Frequency Band (uplink)	824 to 849 MHz	System	CDMA AMPS

EUT Antenna Description			
Type	Monopole	Configuration	Fixed
Dimensions	30.54 mm (L)	Gain	0 dBi
Location	Left Top Corner		

The Cybird product contains the following features:

-Mobile Phone(CDMA Module (800Mhz)
-Intel SA1110 based design
-Full VGA(640X480) TFT LCDCCFL Backlight
-Touch panel
-One Compact FLASH Type II slot
-Microphone for voice input
-Speaker for audible output
-Li-Ion Rechargerable Battery
-Charger & Cradle

Product Descriptions

Use of Product : Digital personal Assistant and mobile phone.
Manufacturer: SAME as above.
Production is planned: [X] Yes, [ ] No
EUT receive date: January 18, 2001
EUT received condition: Good working condition prototype
Test start date: February 27, 2001
Test end date: February 27, 2001

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1.3 Test plan reference

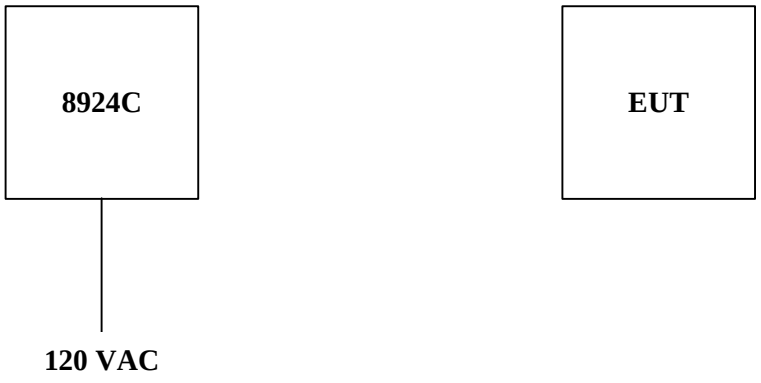
FCC rule part 2.1093, FCC Docket 96-326 & Supplement C to OET Bulletin 65.

1.4 System test configuration

1.4.1 System block diagram & Support equipment

Equipment	Manufacturer	Model Number	Serial Number
CDMA-Mobile station test	HP	8924C	US37111208

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



1.4.2 Test Position

The EUT 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 (1998). The EUT was placed in the intended use position, i.e. CENELEC 80^{o} 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 ear piece 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 ear piece of the EUT is placed 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 80^{o}. Please refer to figure 1 below for the position details:

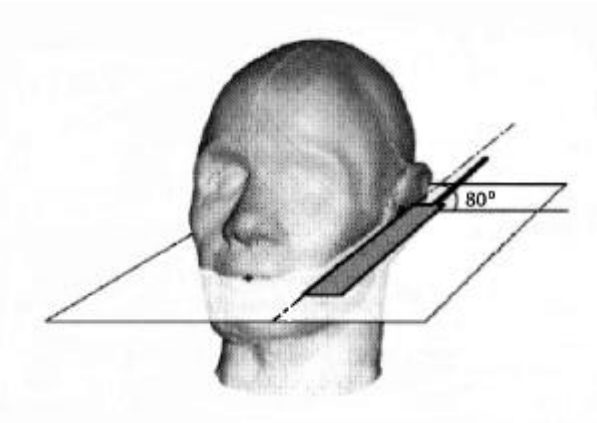


Figure 1: Intended use position

Additionally, the EUT was tested in a second position from the normal 80^{o} angle between the reference line of the phone and the line connecting both auditory canal openings. The center of the ear piece of the EUT is placed at the entry of the auditory canal. The angle between the reference line of the phone and the line connecting both auditory canal openings was adjusted from 80^{o} to the angle where two points of the phone were in contact with the phantom (ear hole and cheek).

Data pages indicate the position of the EUT during testing. The first position of 80^{o} has data pages labeled ‘1 point touch’. The second position has data pages labeled ‘2 point touch’.

The right and left hand sections of the phantom were used for measuring the low, middle, and high channels in the 1 point touch and 2 point touch positions.

1.4.3 Test Condition

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

EUT Antenna	Fixed length	Orientation	N/A
Usage	Right – Hand and Left – Hand	Distance between antenna axis at the joint and the liquid surface:	17.7 mm, Position: 1 point touch, 80 ° 21.8 mm, Position: 2 point touch
Simulating human hand	Not Used	EUT Battery	Fully Charged
Power output	25.5 dBm (Maximum power at antenna port)		

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

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:

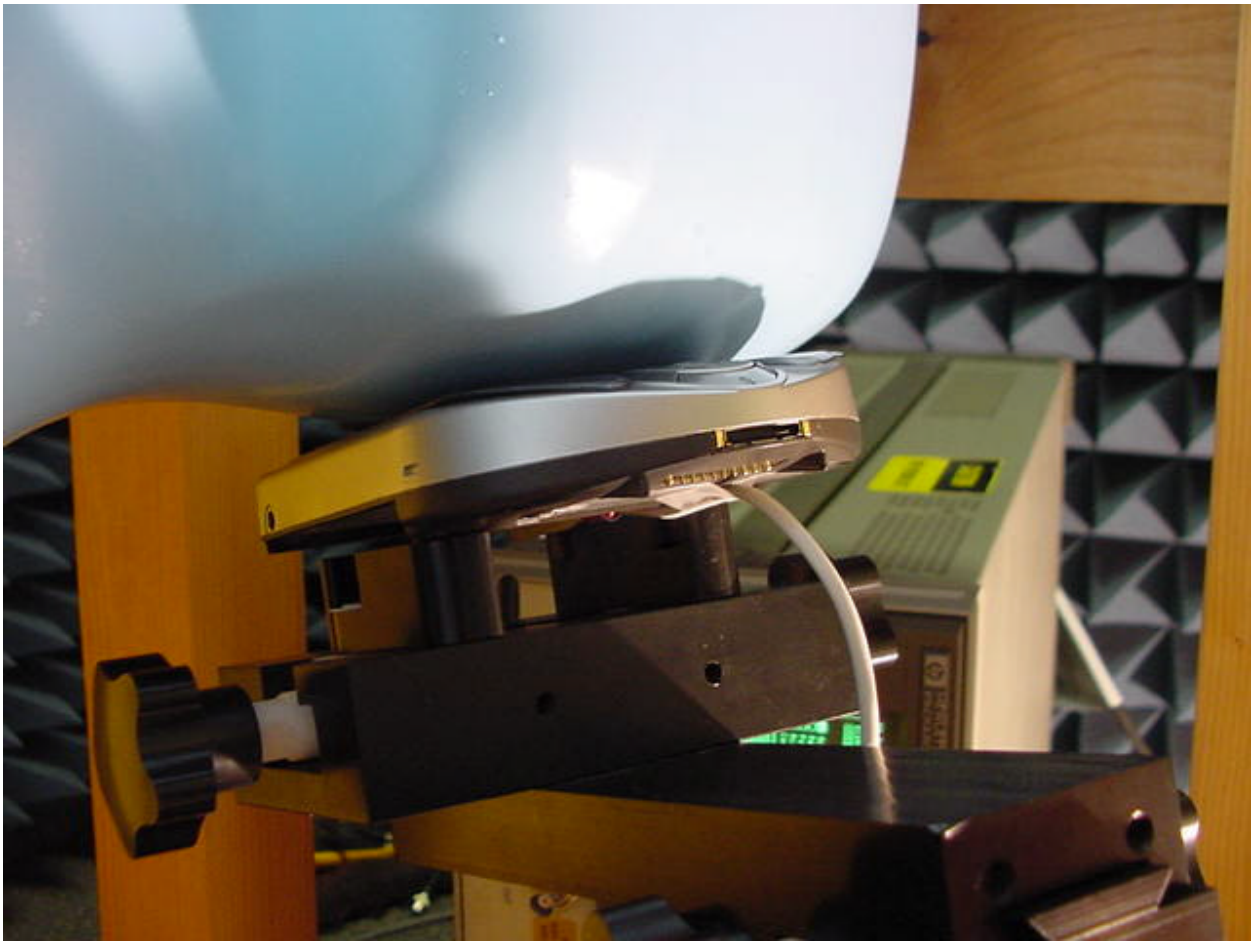
EXPOSURE (General Population/Uncontrolled Exposure environment)	**SAR (W/kg)**
Average over the whole body	0.08
Spatial Peak (1g)	1.60
Spatial Peak for hands, wrists, feet and ankles (10g)	4.00

2.2 Configuration Photographs

SAR measurement Test Setup

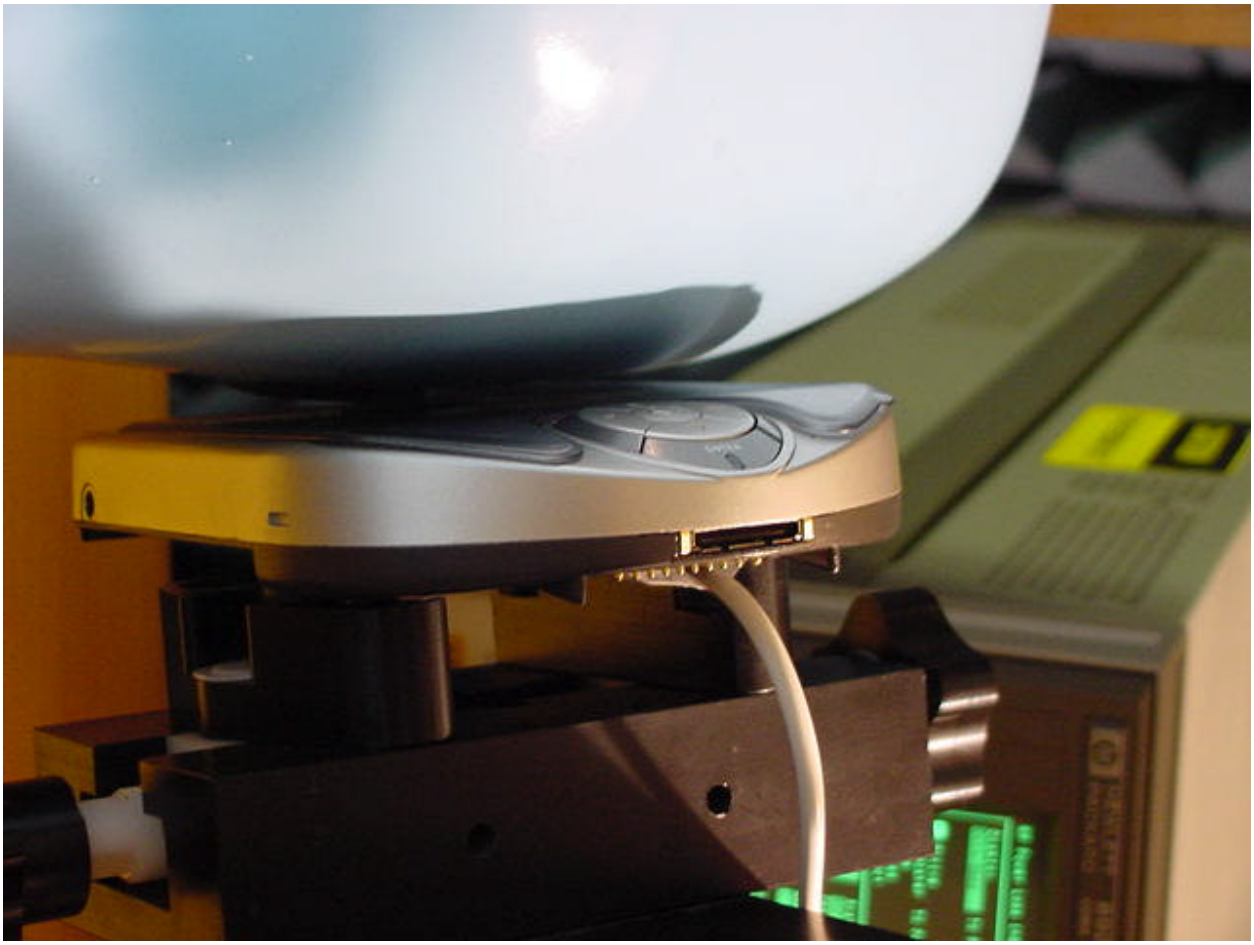
2.2 Configuration Photographs (Continued)

SAR measurement Test Setup



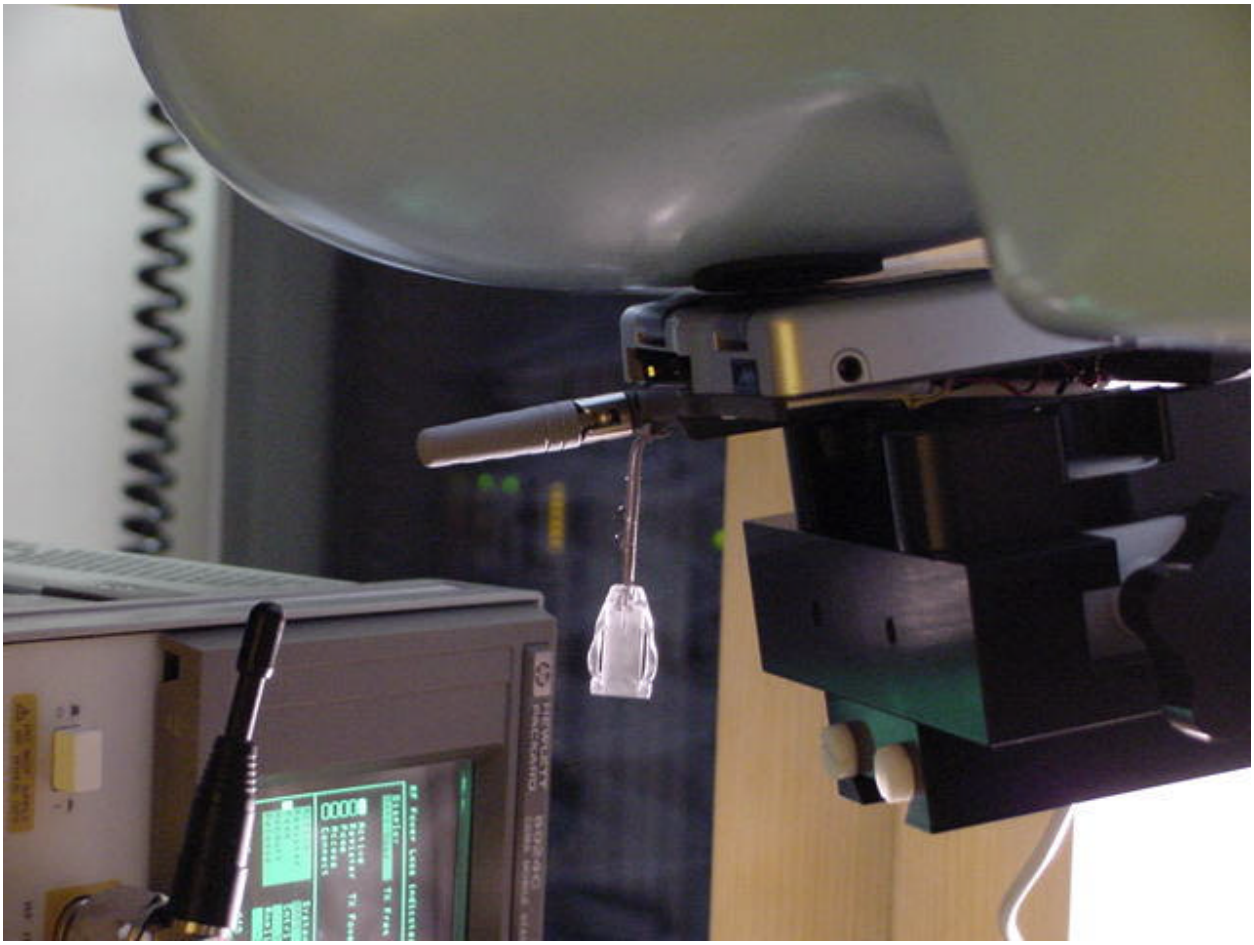
2.2 Configuration Photographs (Continued)

SAR measurement Test Setup



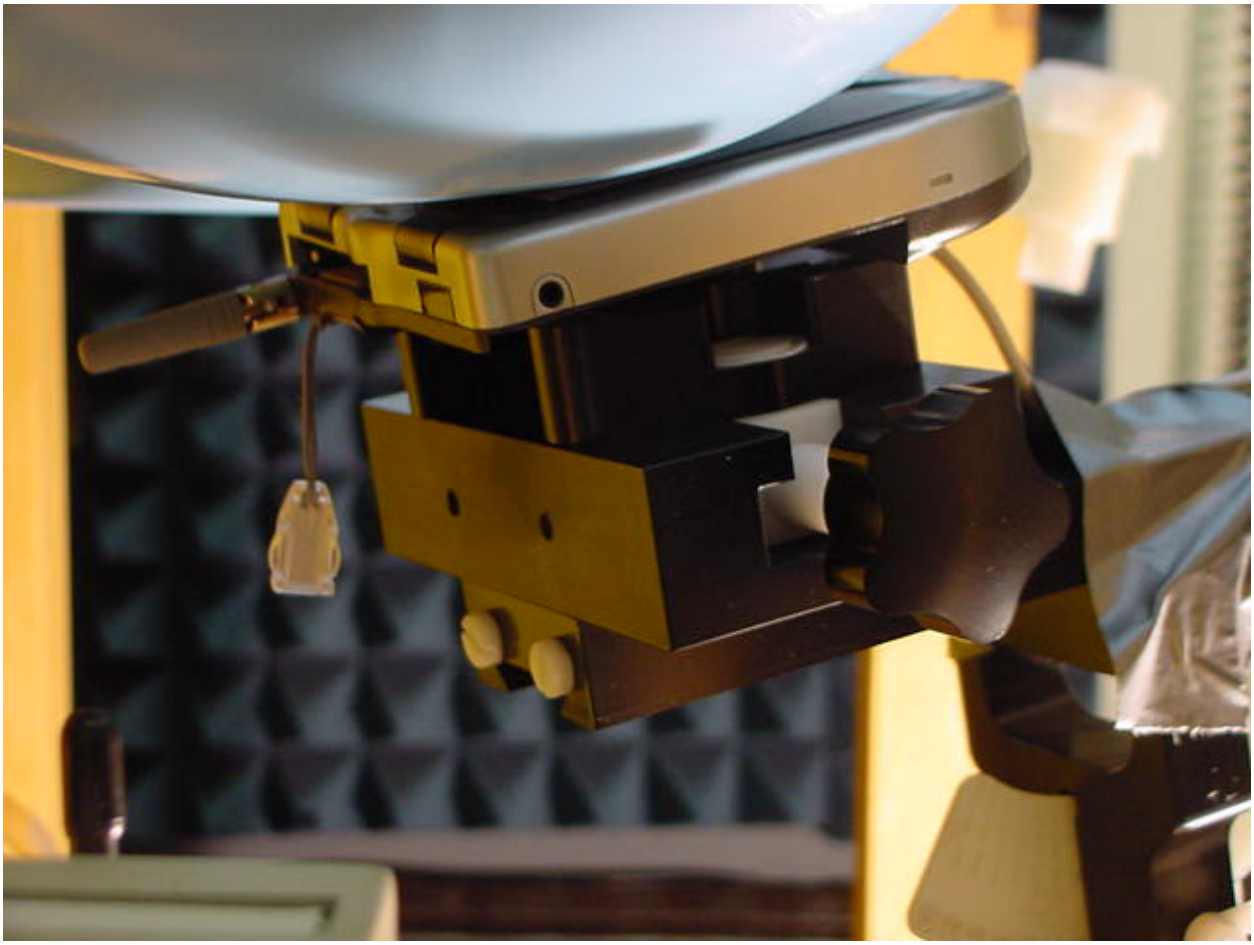
2.2 Configuration Photographs (Continued)

SAR measurement Test Setup



2.2 Configuration Photographs (Continued)

SAR measurement Test Setup



2.2 Configuration Photographs (Continued)

SAR measurement Test Setup

2.2 Configuration Photographs (Continued)

SAR measurement Test Setup

Back Side (Battery Removed)

2.2 Configuration Photographs (Continued)

SAR measurement Test Setup

2.2 Configuration Photographs (Continued)

SAR measurement Test Setup

Front View

2.2 Configuration Photographs (Continued)

SAR measurement Test Setup

Front View (cont.)

2.3 System Verification

Prior to the assessment, the system was verified to the ±5% of the specifications by using the system validation kit. The validation was performed at 900 MHz.

Power input into validation kit: (250mW)

Validation kit	Targeted SAR_{1g} (mW/g)	Measured SAR_{1g} (mW/g)
D900V2, S/N #: 013	2.46	2.49

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 straight-forward 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-measurement 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.

Trade Name:	Cybird	**Model No.:**	CB-0800
Serial No.:	Not Labeled	**Test Engineer:**	Suresh Kondapalli

TEST CONDITIONS			
Ambient Temperature	21 °C	Relative Humidity	44 %
Test Signal Source	Test Mode	Signal Modulation	CW
Output Power Before SAR Test CDMA AMPS	 25.5 dBm 25.5dBM	Output Power After SAR Test CDMA AMPS	 25.5 dBm 25.5dBm
Test Duration	23 Min.	Number of Battery Change	New battery at start of every scan

EUT Position: Left Hand, 80 deg

Channel MHz	Operating Mode	Duty Cycle ratio	Measured SAR_{1g} (mW/g)	Plot Number
824	CDMA	1	0.568	1
836	CDMA	1	0.913	2
849	CDMA	1	0.576	3

EUT Position: Left Hand, Two points Touching Phantom

Channel MHz	Operating Mode	Duty Cycle ratio	Measured SAR_{1g} (mW/g)	Plot Number
824	CDMA	1	0.618	4
836	CDMA	1	0.899	5
849	CDMA	1	0.690	6

EUT Position: Right Hand, 80 deg

Channel MHz	Operating Mode	Duty Cycle ratio	Measured SAR_{1g} (mW/g)	Plot Number
836	CDMA	1	0.518	7
849	CDMA	1	0.385	8

EUT Position: Right Hand, Two points Touching Phantom

Channel MHz	Operating Mode	Duty Cycle ratio	Measured SAR_{1g} (mW/g)	Plot Number
849	CDMA	1	0.306	9

EUT Position: Back Side with Carrying Case Touching Phantom

Channel MHz	Operating Mode	Duty Cycle ratio	Measured SAR_{1g} (mW/g)	Plot Number
824	CDMA	1	0.626	10
836	CDMA	1	0.359	11
849	CDMA	1	0.284	12

EUT Position: Front Side Touching Phantom

Channel MHz	Operating Mode	Duty Cycle ratio	Measured SAR_{1g} (mW/g)	Plot Number
835.52	CDMA	1	0.363	13

AMPS Mode

EUT Position: Left Hand, 80 deg

Channel MHz	Operating Mode	Duty Cycle ratio	Measured SAR_{1g} (mW/g)	Plot Number
825.874	AMPS	1	1.14	14
833.526	AMPS	1	0.93	15
848.10	AMPS	1	0.84	16

EUT Position: Left Hand, Two points Touching Phantom

Channel MHz	Operating Mode	Duty Cycle ratio	Measured SAR_{1g} (mW/g)	Plot Number
825.874	AMPS	1	1.04	17
833.526	AMPS	1	0.80	18
848.10	AMPS	1	0.71	19

EUT Position: Right Hand, 80 deg

Channel MHz	Operating Mode	Duty Cycle ratio	Measured SAR_{1g} (mW/g)	Plot Number
825.874	AMPS	1	0.80	20
833.526	AMPS		0.68	21
848.10	AMPS	1	0.35	22

EUT Position: Right Hand, Two points Touching Phantom

Channel MHz	Operating Mode	Duty Cycle ratio	Measured SAR_{1g} (mW/g)	Plot Number
825.874	AMPS	1	0.61	23
833.526	AMPS	1	0.56	24
848.10	AMPS	1	0.44	25

EUT Position:Back Side with Carrying Case Touching Phantom

Channel MHz	Operating Mode	Duty Cycle ratio	Measured SAR_{1g} (mW/g)	Plot Number
825.874	AMPS	1	1.36	26
833.526	AMPS	1	1.25	27
848.10	AMPS	1	0.96	28

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 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 #	CAL. DATE
Robot	**Stäubli RX60L**	597412-01	N/A
	Repeatability: ± 0.025mm Accuracy: $0.806x10^{-3}$ degree Number of Axes: 6		
E-Field Probe	**ET3DV5**	1333	4/10/00
	Frequency Range: 10 MHz to 6 GHz Linearity: ± 0.2 dB Directivity: ± 0.1 dB in brain tissue		
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)		
Simulated Tissue	**Mixture**	N/A	1/18/01
	Please see section 6.2 for details		
Power Meter	**HP 8900D** w/ 84811A sensor	3607U00673	8/1/00
	Frequency Range: 100kHz to 18 GHz Power Range: 300µW to 3W		

3.2 Tissue Simulating Liquid

Brain	
Ingredient	**Frequency** (800 – 900 MHz)
Water	40.3 %
Sugar	56.0 %
Salt	2.5 %
HEC	1.0 %
Bactericide	0.2 %

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)	$_r$ *	*(mho/m)	**(kg/m$^{3)}$
835	47.7 ± 5%	0.80 ± 10%	1000

* *worst case uncertainty of the HP 85070A dielectric probe kit*

** *worst case assumption*

Note: The amount of each ingredient specified in the tables are not the exact amounts of the final test solution. The final test solution was adjusted by adding small amounts of either water, sugar, and/or salt to calibrate the solution to meet the proper dielectric parameters.

3.2 Tissue Simulating Liquid (Continued)

Muscle	
Ingredient	**Frequency** (800 – 900 MHz)
Water	54.05 %
Sugar	45.05 %
Salt	0.1 %
Bactericide	0.8%

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)	$_r$ *	*(mho/m)	**(kg/m$^{3)}$
835	51.1 ± 5%	0.88 ± 10%	1000

* *worst case uncertainty of the HP 85070A dielectric probe kit*

** *worst case assumption*

Note: The amount of each ingredient specified in the tables are not the exact amounts of the final test solution. The final test solution was adjusted by adding small amounts of either water, sugar, and/or salt to calibrate the solution to meet the proper dielectric parameters.

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 user's 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.

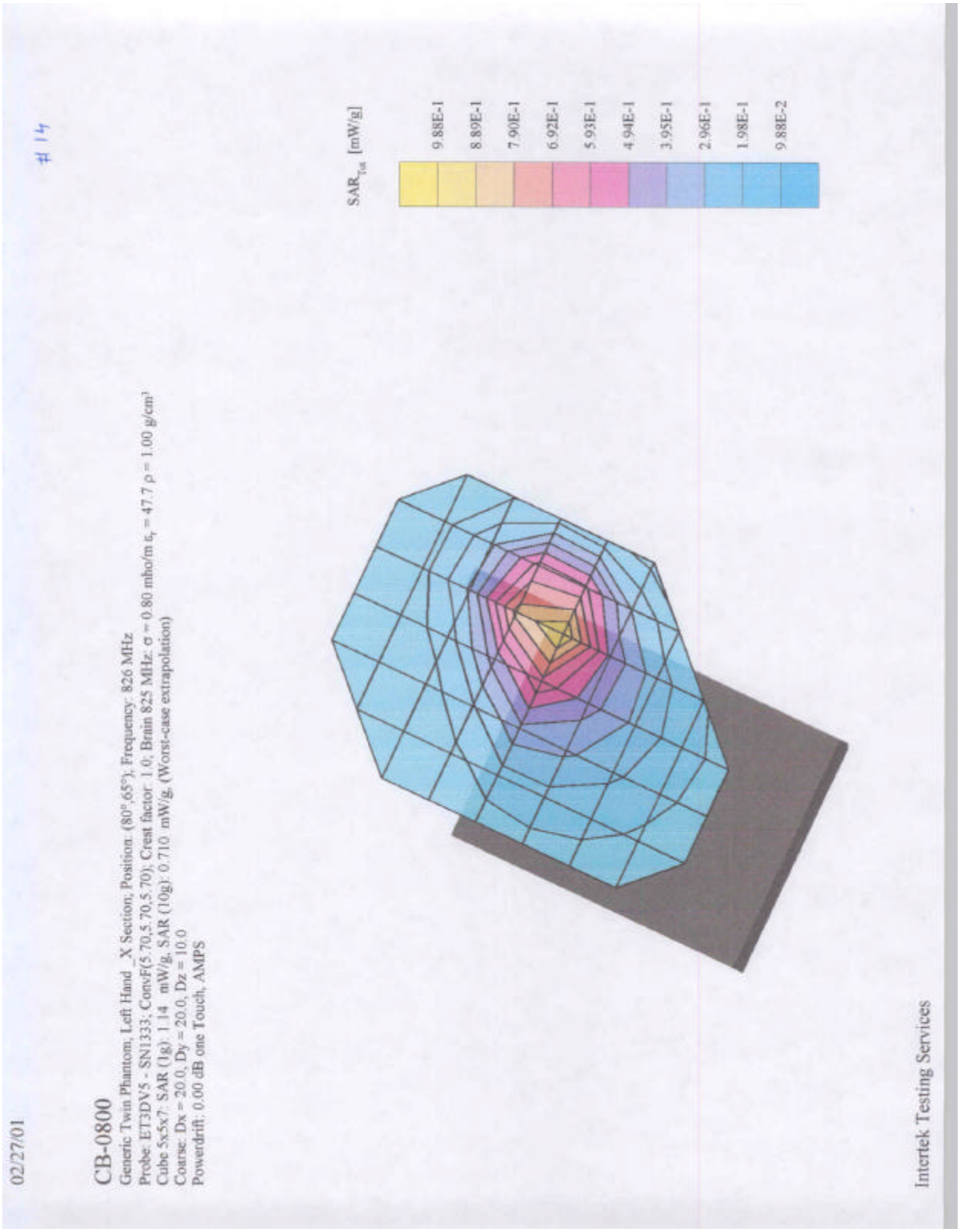
6.0 DOCUMENT HISTORY

Revision/ Job Number	Writer Initials	Date	Change
1.0 / J20041584	SS	February 28, 2001	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.


#14
02/27/01
CB-0800
Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 826 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 825 MHz: σ = 0.80 mho/m εr = 47.7 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.14 mW/g, SAR (10g): 0.710 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.00 dB one Touch, AMPS
SAR1st [mW/g]
9.88E-1
8.89E-1
7.90E-1
6.92E-1
5.93E-1
4.94E-1
3.95E-1
2.96E-1
1.98E-1
9.88E-2
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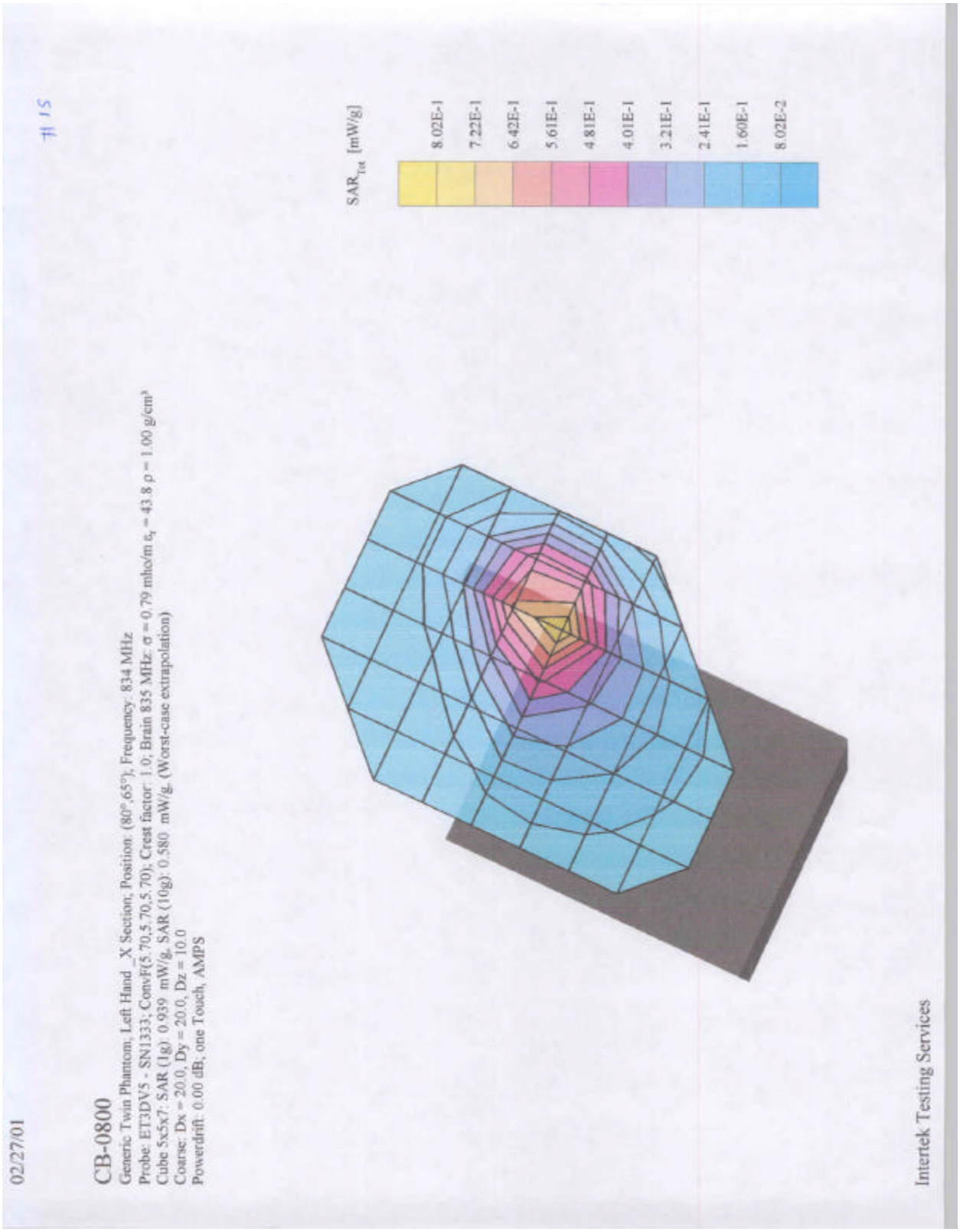
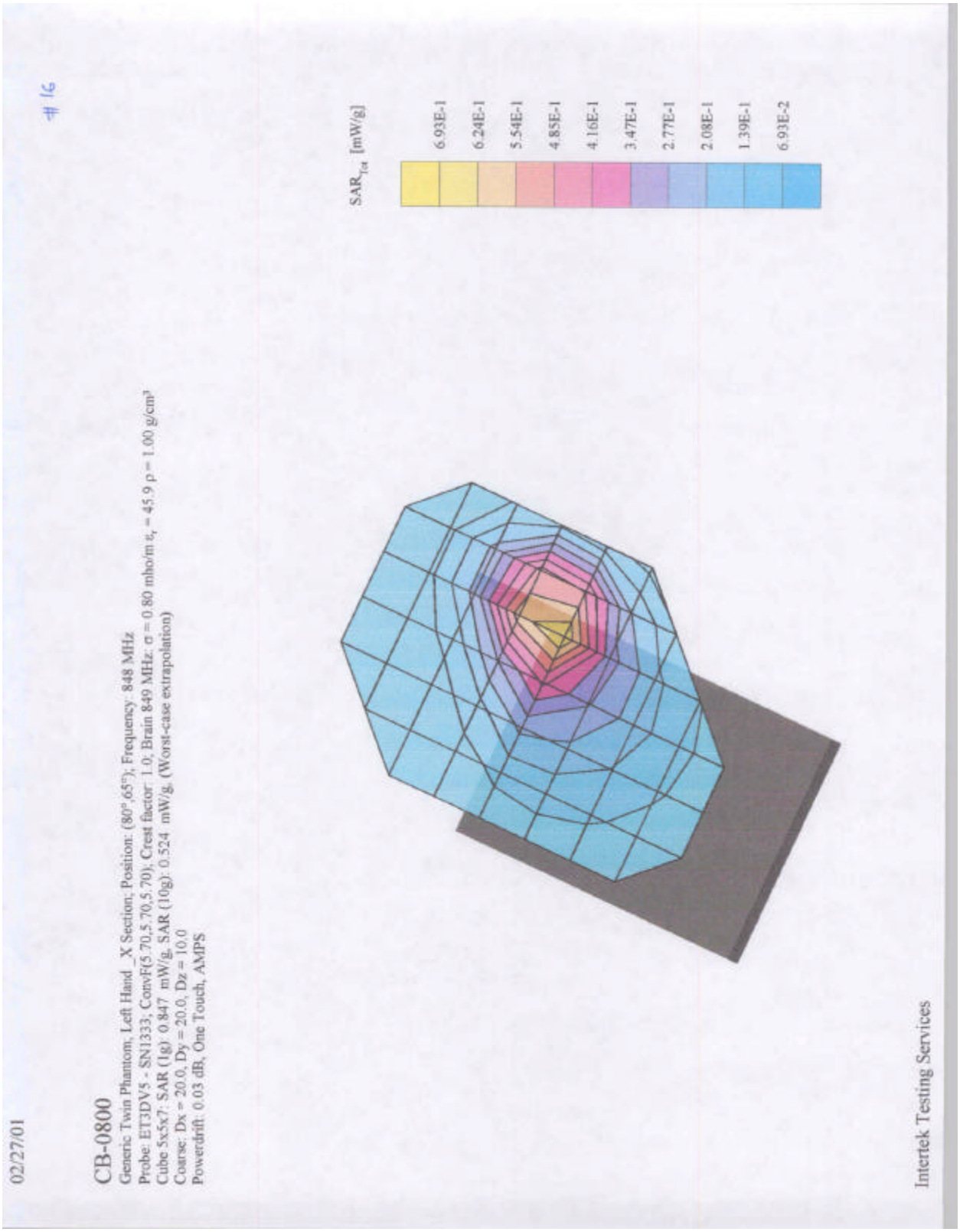
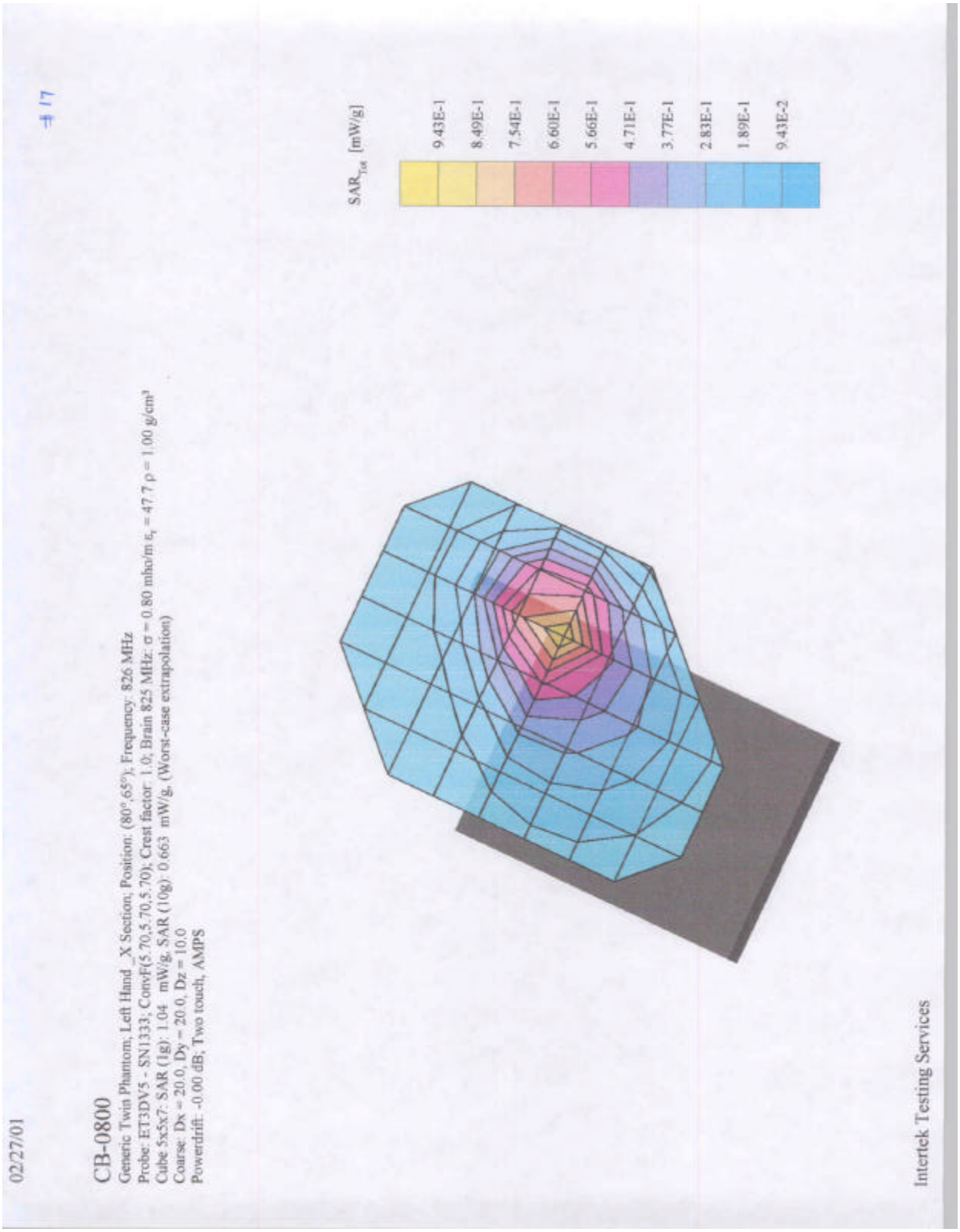

11 15
SAR_{Tot} [mW/g]
8.02E-1
7.22E-1
6.42E-1
5.61E-1
4.81E-1
4.01E-1
3.21E-1
2.41E-1
1.60E-1
8.02E-2
02/27/01
CB-0800
Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 834 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 835 MHz: σ = 0.79 mho/m ε_r = 43.8 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.939 mW/g, SAR (10g): 0.580 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.00 dB; one Touch, AMPS
Intertek Testing Services


#16
02/27/01
CB-0800
Generic Twin Phantom; Left Hand_X Section; Position: (80°,65°); Frequency: 848 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 849 MHz: σ = 0.80 mho/m ε_r = 45.9 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.847 mW/g, SAR (10g): 0.524 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.03 dB, One Touch, AMPS
SAR_Tot [mW/g]
6.93E-1
6.24E-1
5.54E-1
4.85E-1
4.16E-1
3.47E-1
2.77E-1
2.08E-1
1.39E-1
6.93E-2
Intertek Testing Services

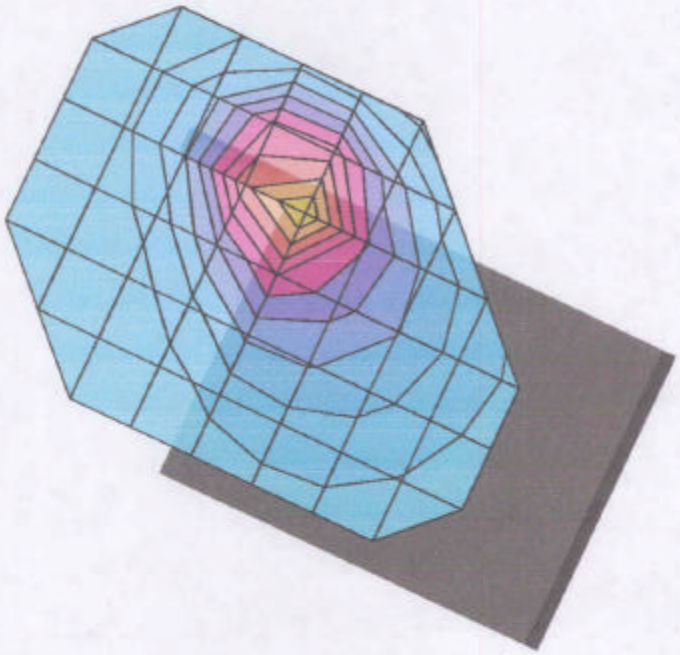

#17
SAR_{Tot} [mW/g]
9.43E-1
8.49E-1
7.54E-1
6.60E-1
5.66E-1
4.71E-1
3.77E-1
2.83E-1
1.89E-1
9.43E-2
02/27/01
CB-0800
Generic Twin Phantom; Left Hand_X Section; Position: (80°,65°); Frequency: 826 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 825 MHz: σ = 0.80 mho/m ε_r = 47.7 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.04 mW/g, SAR (10g): 0.663 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.00 dB; Two touch, AMPS
Intertek Testing Services

#18

02/27/01

CB-0800

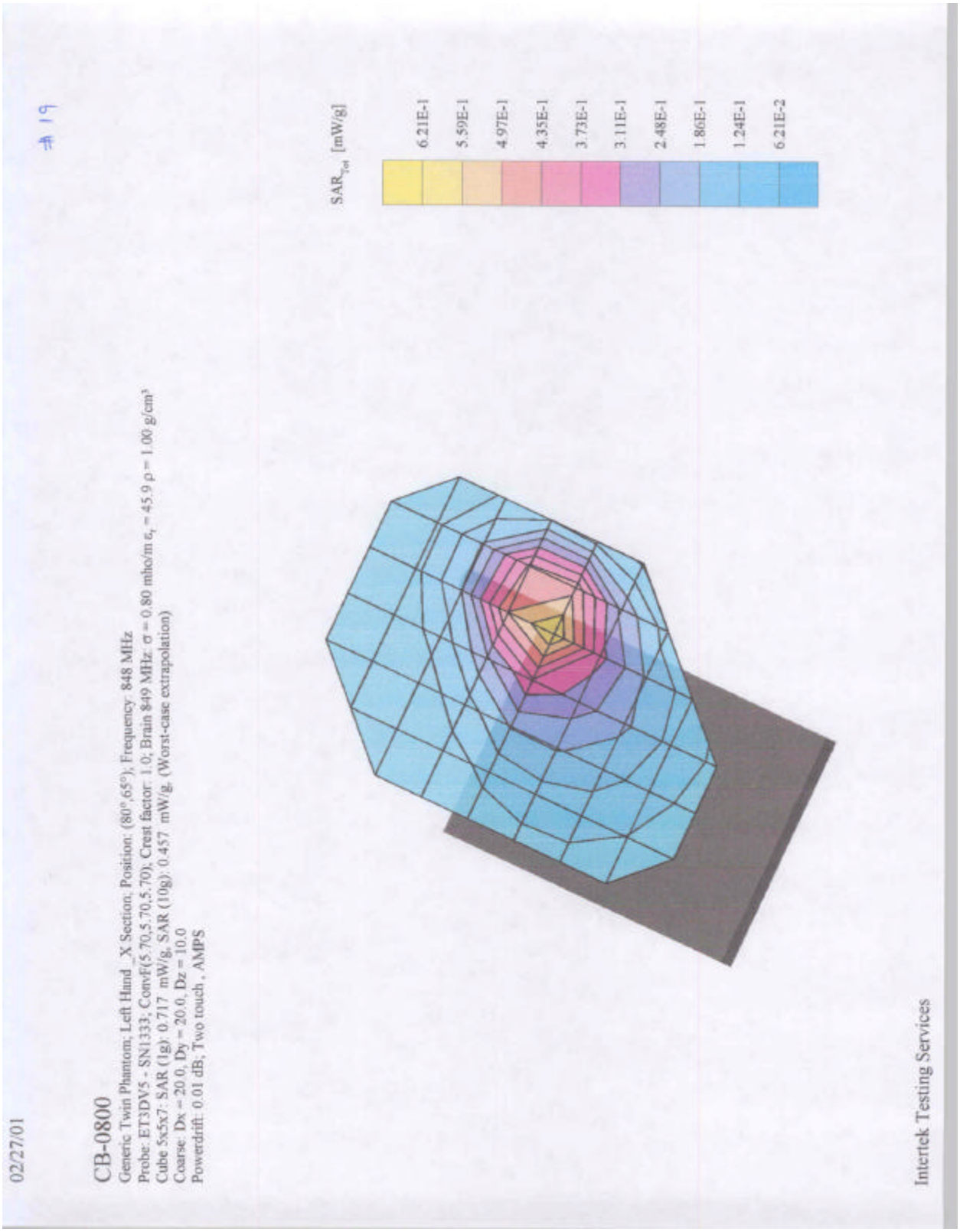
Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 834 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 835 MHz: σ = 0.79 mho/m ε_r = 43.8 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.808 mW/g, SAR (10g): 0.511 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.00 dB; Two touch, AMPS

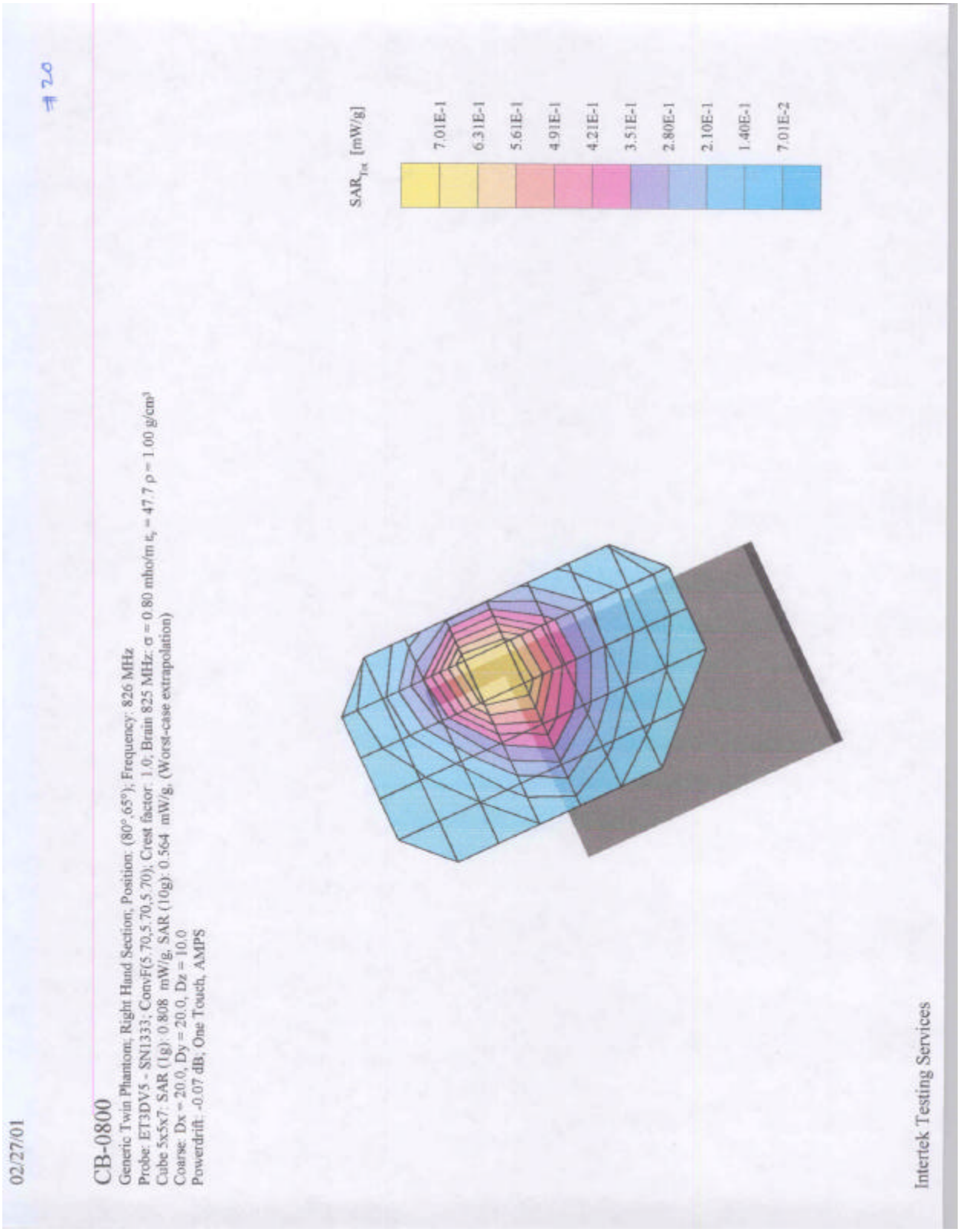


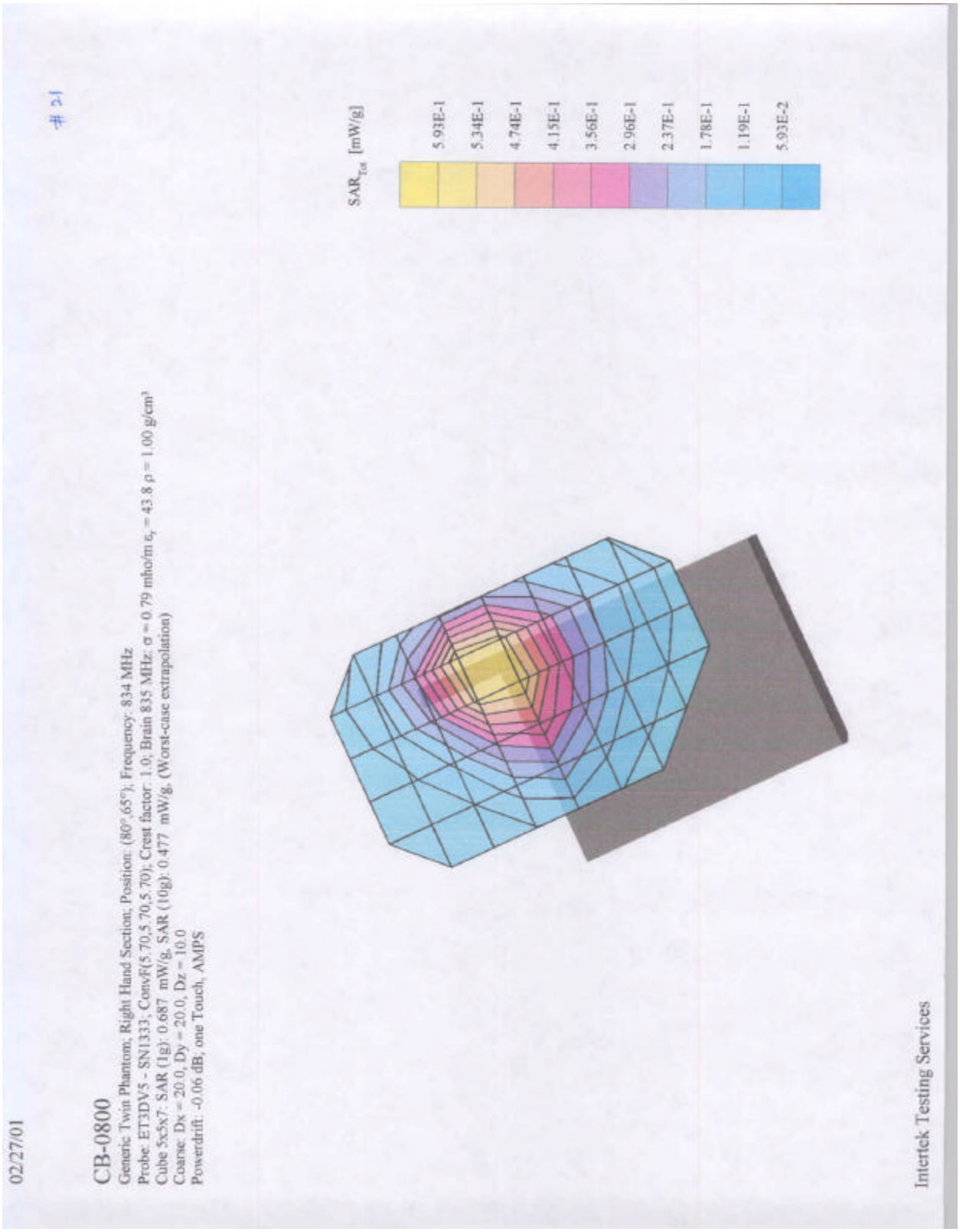
SAR_{Tot} [mW/g]

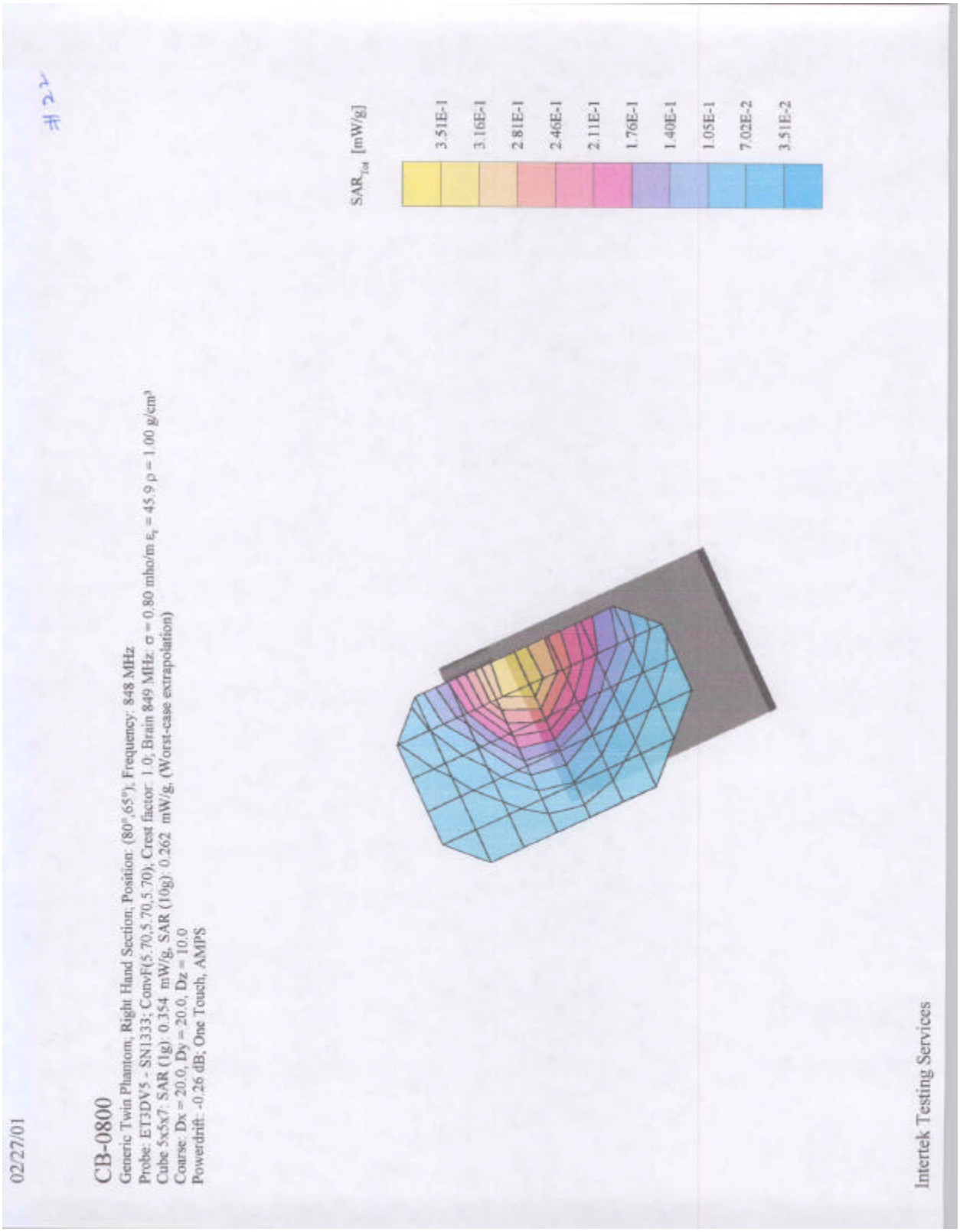
7.27E-1
6.54E-1
5.82E-1
5.09E-1
4.36E-1
3.63E-1
2.91E-1
2.18E-1
1.45E-1
7.27E-2

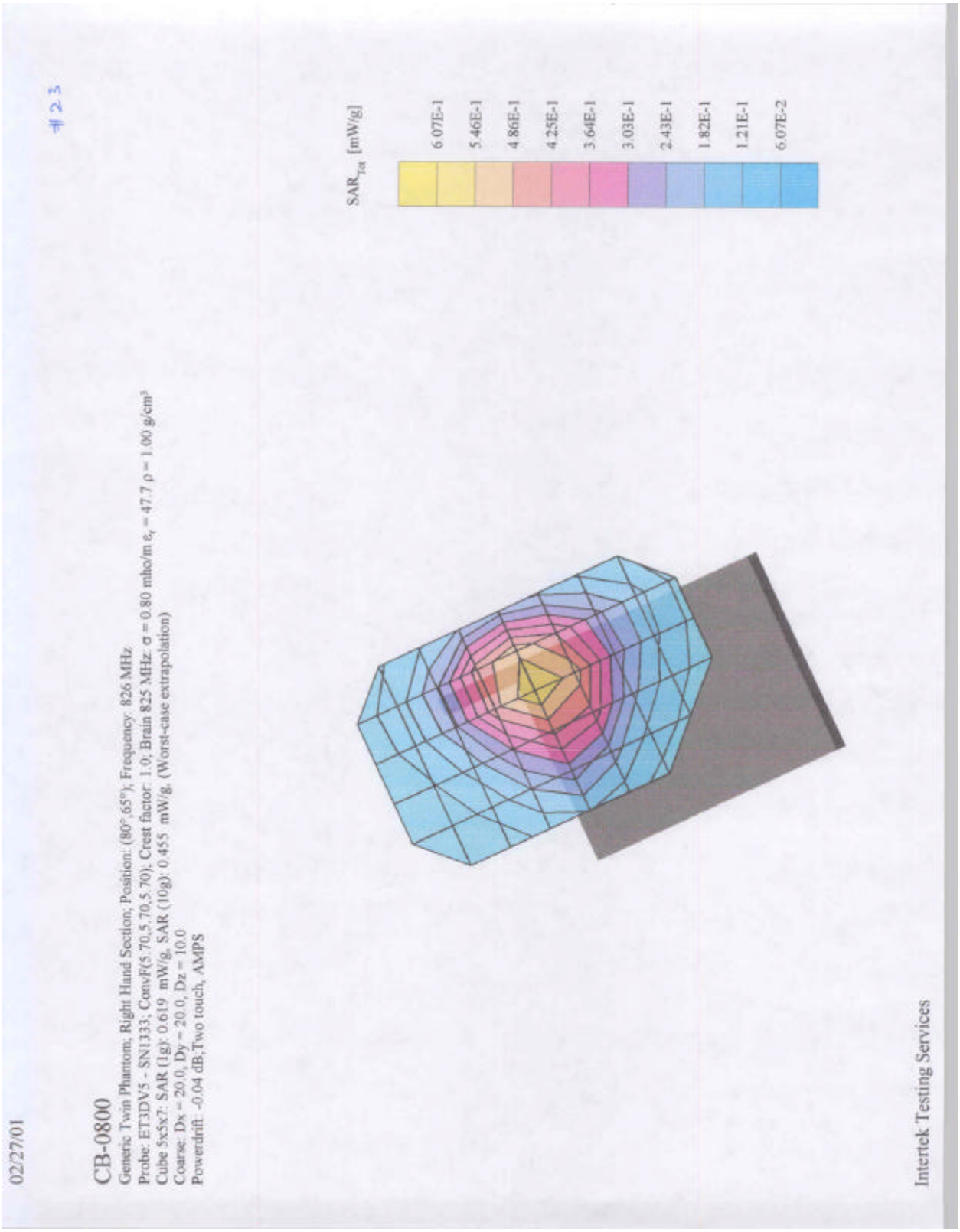
Intertek Testing Services

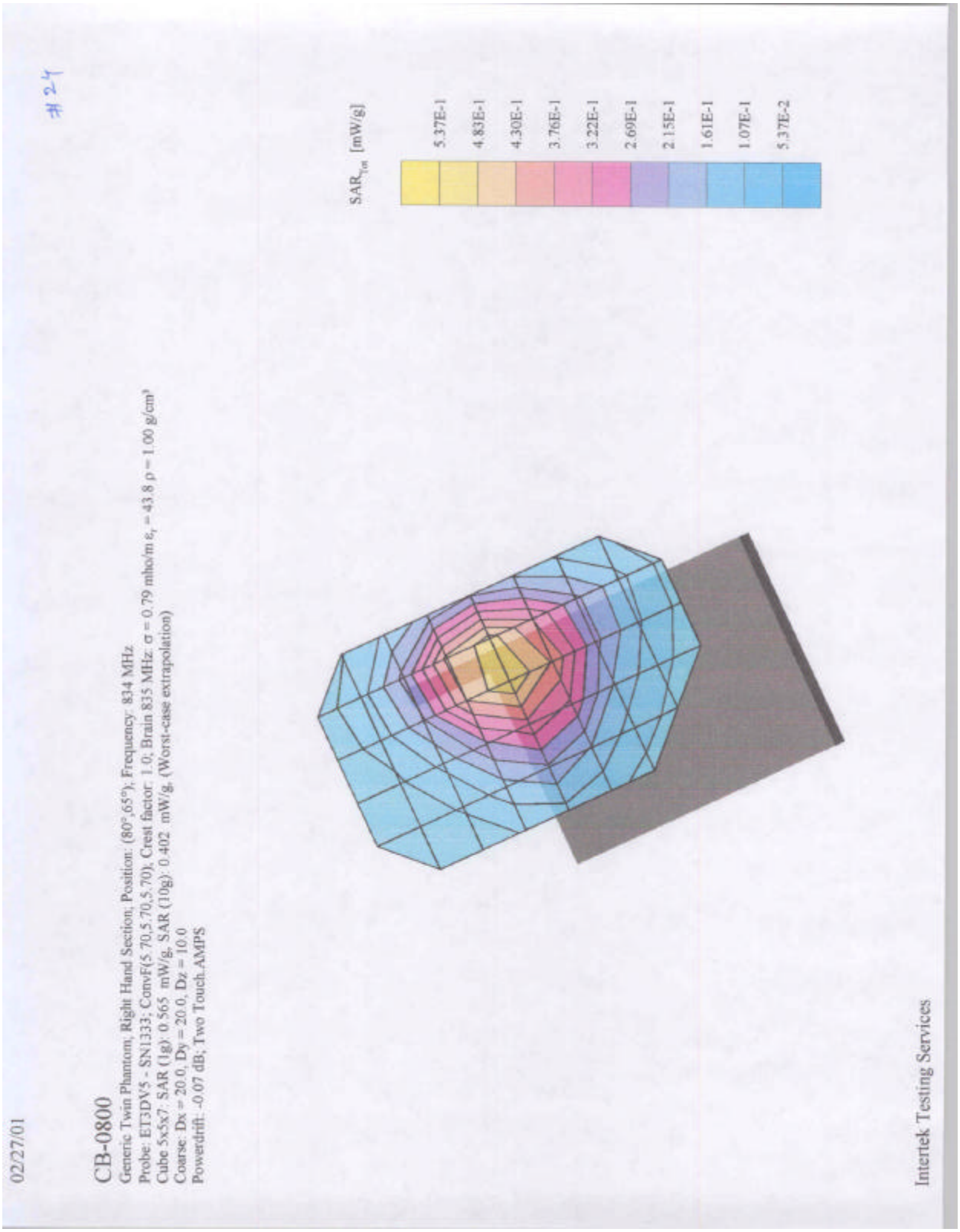

#19
02/27/01
CB-0800
Generic Twin Phantom; Left Hand_X Section; Position: (80°,65°); Frequency: 848 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 849 MHz: σ = 0.80 mho/m ε_r = 45.9 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.717 mW/g, SAR (10g): 0.457 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.01 dB; Two touch , AMPS
SAR_tot [mW/g]
6.21E-1
5.59E-1
4.97E-1
4.35E-1
3.73E-1
3.11E-1
2.48E-1
1.86E-1
1.24E-1
6.21E-2
Intertek Testing Services


02/27/01
CB-0800
Generic Twin Phantom; Right Hand Section; Position: (80°,65°); Frequency: 826 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 825 MHz: σ = 0.80 mho/m εr = 47.7 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.808 mW/g, SAR (10g): 0.564 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.07 dB, One Touch, AMPS
SAR [mW/g]
7.01E-1
6.31E-1
5.61E-1
4.91E-1
4.21E-1
3.51E-1
2.80E-1
2.10E-1
1.40E-1
7.01E-2
Intertek Testing Services


#21
02/27/01
CB-0800
Generic Twin Phantom; Right Hand Section; Position: (80°,65°); Frequency: 834 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 835 MHz: σ = 0.79 mho/m εr = 43.8 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.687 mW/g, SAR (10g): 0.477 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.06 dB, one Touch, AMPS
SAR Tot [mW/g]
5.93E-1
5.34E-1
4.74E-1
4.15E-1
3.56E-1
2.96E-1
2.37E-1
1.78E-1
1.19E-1
5.93E-2
Intertek Testing Services


#22
SAR$_{Tot}$ [mW/g]
3.51E-1
3.16E-1
2.81E-1
2.46E-1
2.11E-1
1.76E-1
1.40E-1
1.05E-1
7.02E-2
3.51E-2
02/27/01
CB-0800
Generic Twin Phantom, Right Hand Section, Position: (80°,65°), Frequency: 848 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 849 MHz: σ = 0.80 mho/m ε$_r$ = 45.9 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.354 mW/g, SAR (10g): 0.262 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.26 dB, One Touch, AMPS
Intertek Testing Services


#23
02/27/01
CB-0800
Generic Twin Phantom; Right Hand Section; Position: (80°,65°); Frequency: 826 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 825 MHz: σ = 0.80 mho/m εr = 47.7 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.619 mW/g, SAR (10g): 0.455 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.04 dB,Two touch, AMPS
SAR_Tot [mW/g]
6.07E-1
5.46E-1
4.86E-1
4.25E-1
3.64E-1
3.03E-1
2.43E-1
1.82E-1
1.21E-1
6.07E-2
Intertek Testing Services


#24
02/27/01
CB-0800
Generic Twin Phantom, Right Hand Section; Position: (80°,65°); Frequency: 834 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 835 MHz: σ = 0.79 mho/m εr = 43.8 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.565 mW/g, SAR (10g): 0.402 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.07 dB; Two Touch.AMPS
SAR1m [mW/g]
5.37E-1
4.83E-1
4.30E-1
3.76E-1
3.22E-1
2.69E-1
2.15E-1
1.61E-1
1.07E-1
5.37E-2
Intertek Testing Services

#2-5

02/27/01

CB-0800

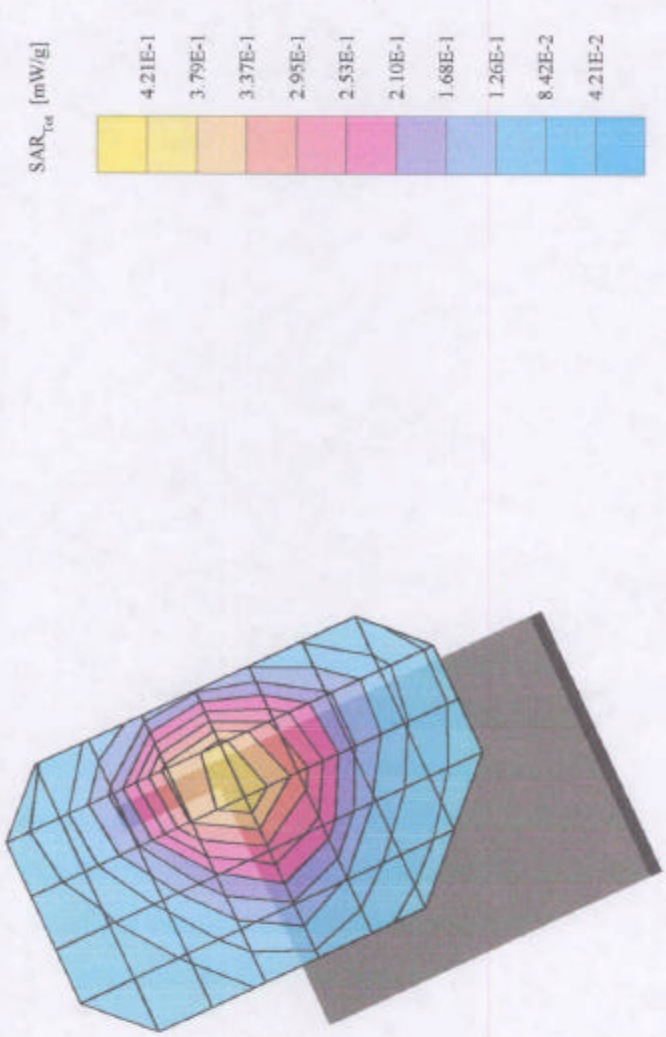
Generic Twin Phantom; Right Hand Section; Position: (80°,65°); Frequency: 848 MHz

Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 849 MHz: σ = 0.80 mho/m ε_r = 45.9 ρ = 1.00 g/cm³

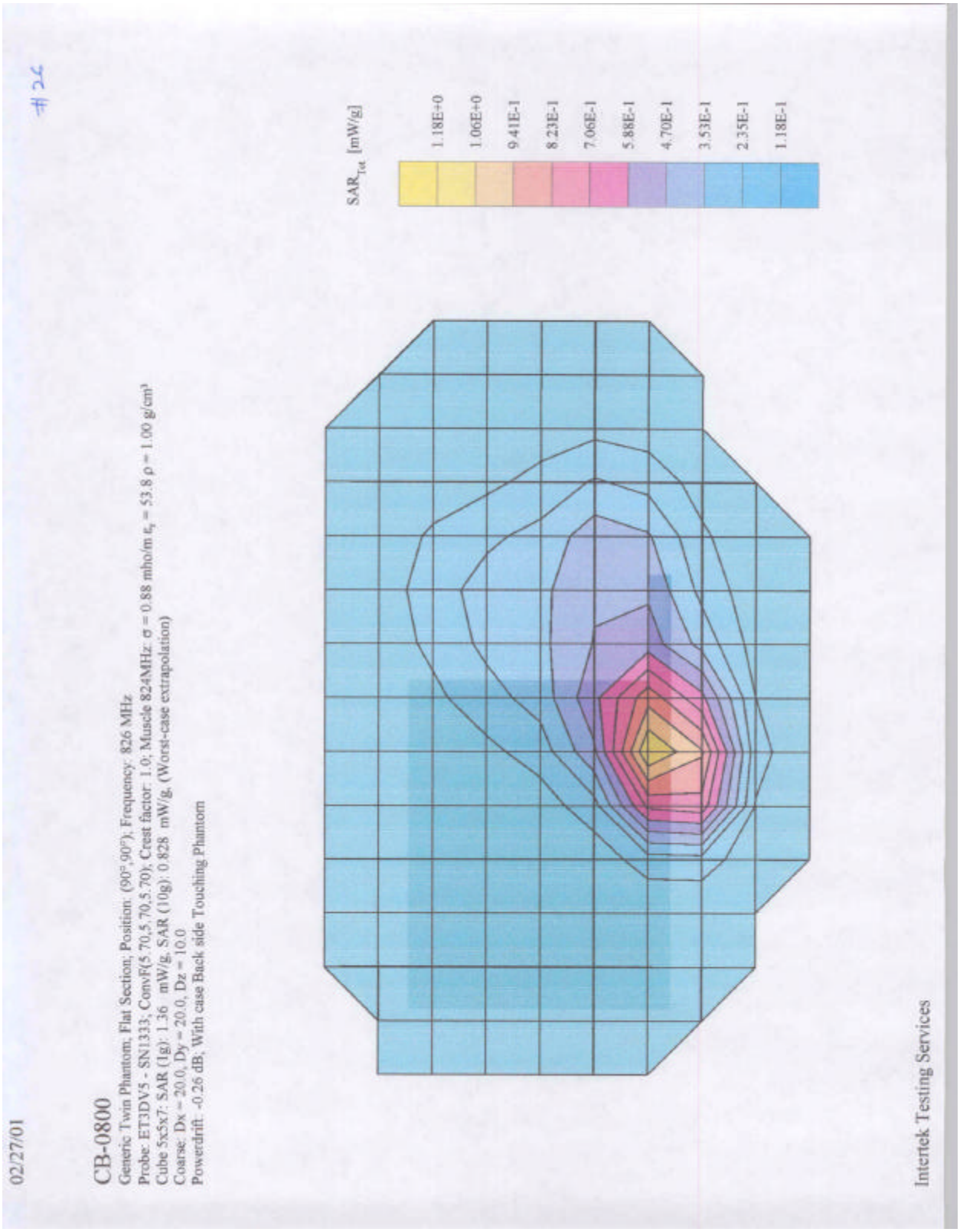
Cube 5x5x7: SAR (1g): 0.443 mW/g, SAR (10g): 0.314 mW/g, (Worst-case extrapolation)

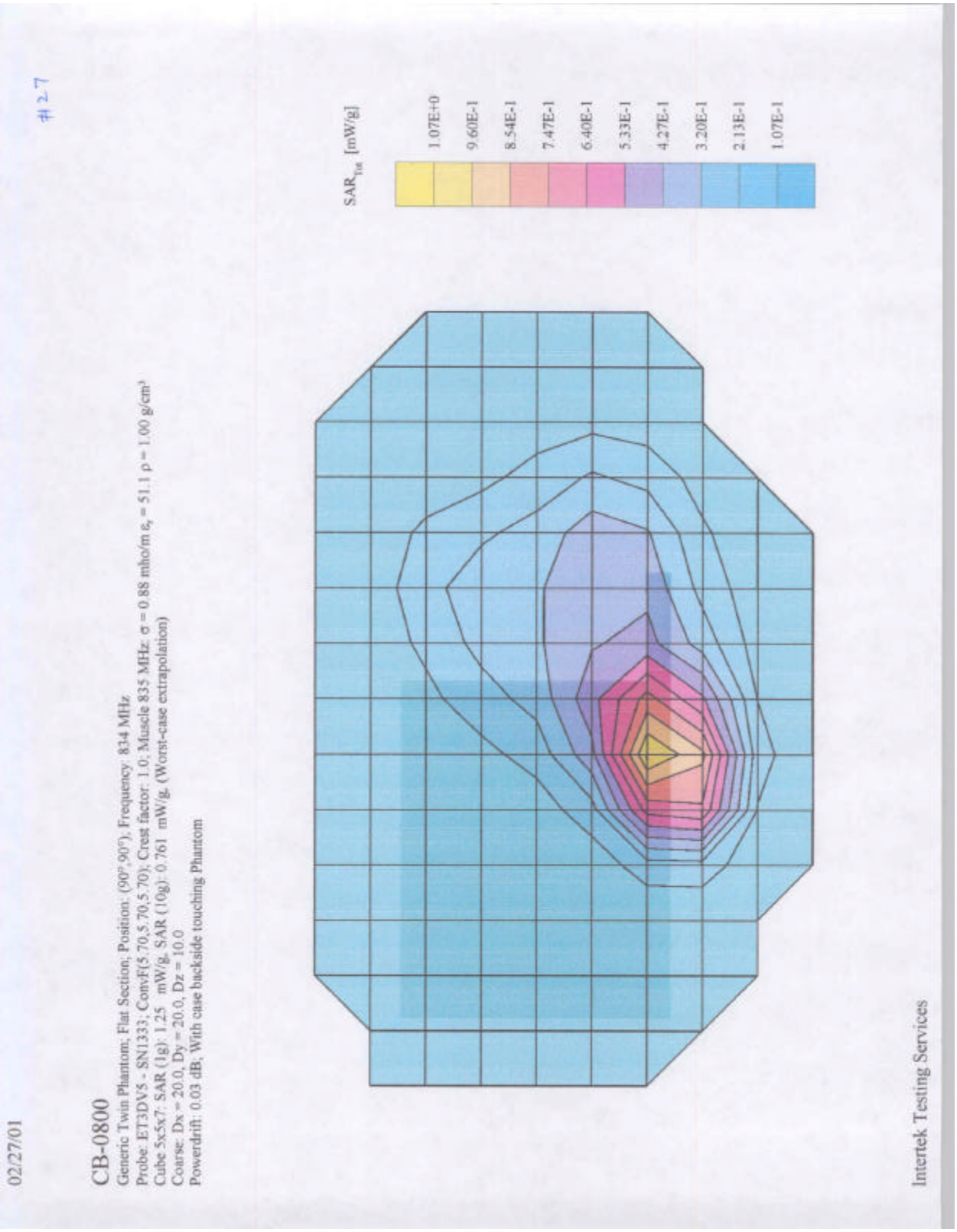
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0

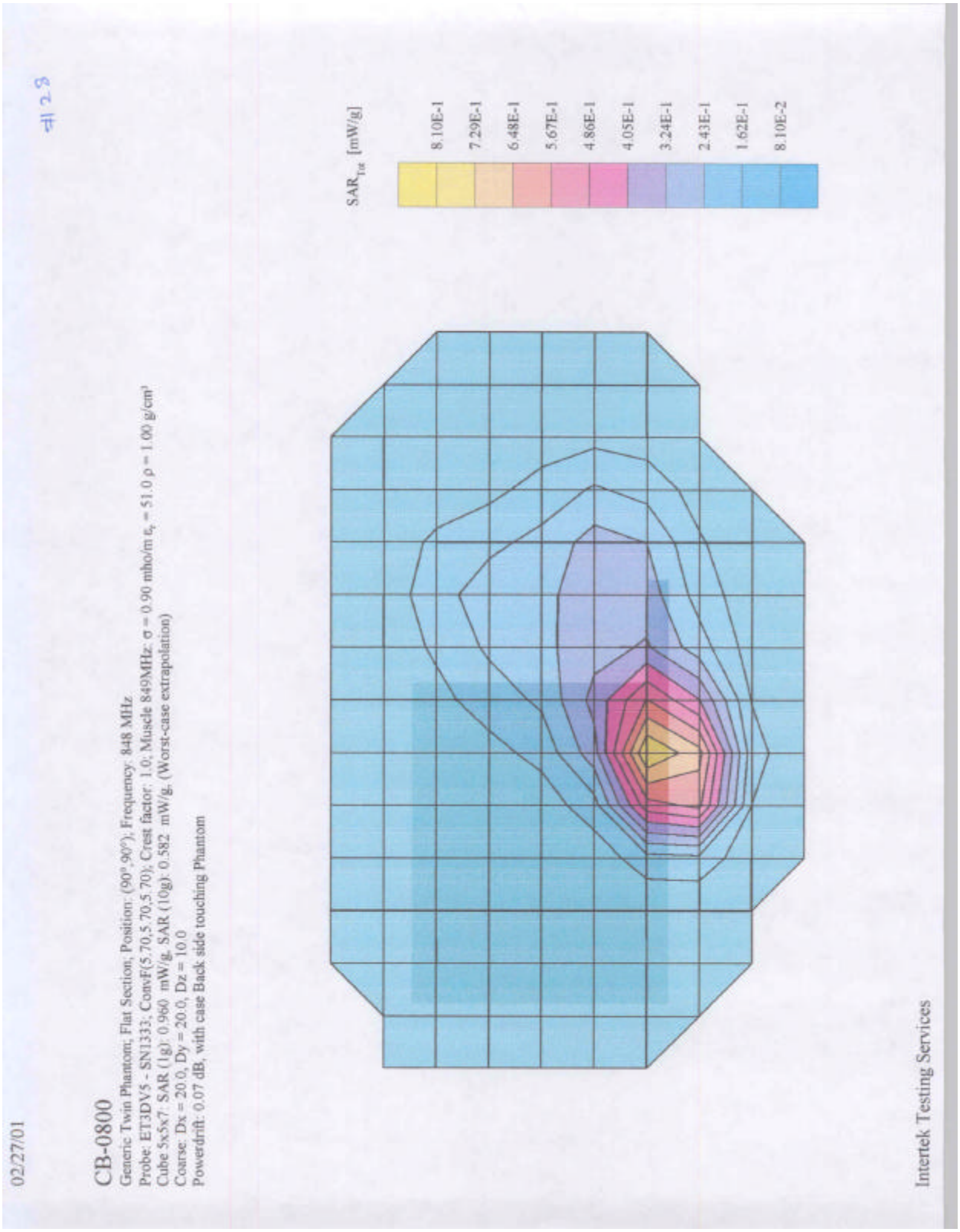
Powerdrift: -0.09 dB, Two touch, AMPS



Intertek Testing Services


#26
SAR_{Tot} [mW/g]
1.18E+0
1.06E+0
9.41E-1
8.23E-1
7.06E-1
5.88E-1
4.70E-1
3.53E-1
2.35E-1
1.18E-1
02/27/01
CB-0800
Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 826 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Muscle 824MHz: σ = 0.88 mho/m ε_r = 53.8 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.36 mW/g, SAR (10g): 0.828 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.26 dB; With case Back side Touching Phantom
Intertek Testing Services


#1 2-7
02/27/01
CB-0800
Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 834 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Muscle 835 MHz: σ = 0.88 mho/m ε_r = 51.1 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.25 mW/g, SAR (10g): 0.761 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.03 dB; With case backside touching Phantom
SAR_tot [mW/g]
1.07E+0
9.60E-1
8.54E-1
7.47E-1
6.40E-1
5.33E-1
4.27E-1
3.20E-1
2.13E-1
1.07E-1
Intertek Testing Services


#128
02/27/01
CB-0800
Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 848 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Muscle 849MHz: σ = 0.90 mho/m εr = 51.0 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.960 mW/g, SAR (10g): 0.582 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.07 dB, with case Back side touching Phantom
SAR_Tot [mW/g]
8.10E-1
7.29E-1
6.48E-1
5.67E-1
4.86E-1
4.05E-1
3.24E-1
2.43E-1
1.62E-1
8.10E-2
Intertek Testing Services

APPENDIX B - E-Field Probe Calibration Data

See attached.

Schmid & Partner
Engineering AG

Staffelstrasse 8, 8045 Zurich, Switzerland, Telefon +41 1 280 08 60, Fax +41 1 280 08 64

Calibration Certificate

Dosimetric E-Field Probe

Type:	**ET3DV5**
Serial Number:	**1333**
Place of Calibration:	**Zurich**
Date of Calibration:	**April 10, 2000**
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

Staffelstrasse 8, 8045 Zurich, Switzerland, Telefon +41 1 280 08 60, Fax +41 1 280 08 64

Probe ET3DV5

SN:1333

Manufactured:	December 20, 1997
Last calibration:	March 18, 1999
Recalibrated:	April 10, 2000

Calibrated for System DASY3

DASY3 - Parameters of Probe: ET3DV5 SN:1333

Sensitivity in Free Space

Diode Compression

NormX	**2.39** $\mu V/(V/m)^2$	DCP X	**100** mV
NormY	**2.36** $\mu V/(V/m)^2$	DCP Y	**100** mV
NormZ	**2.34** $\mu V/(V/m)^2$	DCP Z	**100** mV

Sensitivity in Tissue Simulating Liquid

Brain **450 MHz** ε_r **= 48 ± 5%** σ **= 0.50 ± 10% mho/m**

ConvF X	**6.03**	extrapolated	Boundary effect:	
ConvF Y	**6.03**	extrapolated	Alpha	**0.13**
ConvF Z	**6.03**	extrapolated	Depth	**3.57**

Brain **900 MHz** ε_r **= 42.5 ± 5%** σ **= 0.86 ± 10% mho/m**

ConvF X	**5.70**	± 7% (k=2)	Boundary effect:	
ConvF Y	**5.70**	± 7% (k=2)	Alpha	**0.34**
ConvF Z	**5.70**	± 7% (k=2)	Depth	**3.00**

Brain **1500 MHz** ε_r **= 41 ± 5%** σ **= 1.32 ± 10% mho/m**

ConvF X	**5.25**	interpolated	Boundary effect:	
ConvF Y	**5.25**	interpolated	Alpha	**0.61**
ConvF Z	**5.25**	interpolated	Depth	**2.23**

Brain **1800 MHz** ε_r **= 41 ± 5%** σ **= 1.69 ± 10% mho/m**

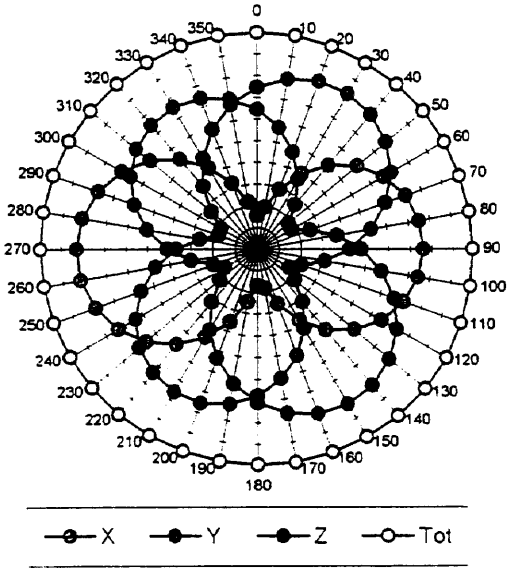
ConvF X	**5.03**	± 7% (k=2)	Boundary effect:	
ConvF Y	**5.03**	± 7% (k=2)	Alpha	**0.74**
ConvF Z	**5.03**	± 7% (k=2)	Depth	**1.85**

Sensor Offset

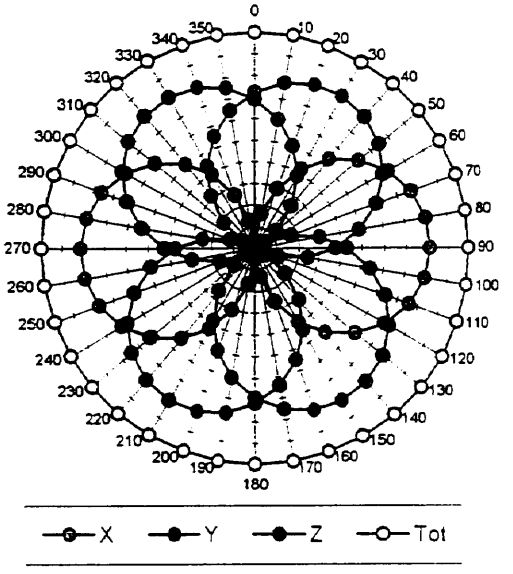
Probe Tip to Sensor Center	**2.7**	mm
Optical Surface Detection	**1.9 ± 0.2**	mm

Receiving Pattern (ϕ), θ = 0°

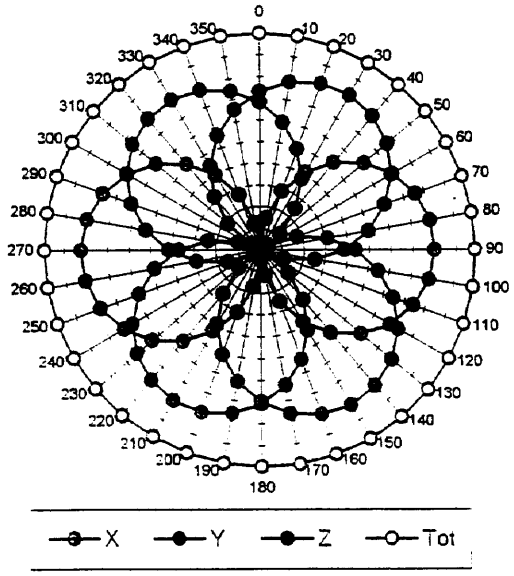
f = 30 MHz, TEM cell ifi110



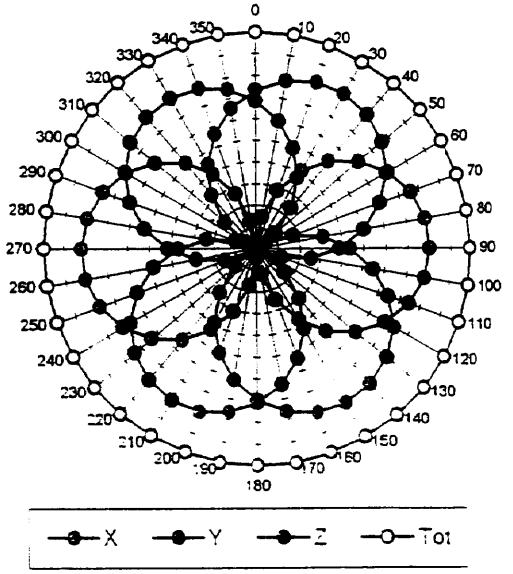
f = 100 MHz, TEM cell ifi110

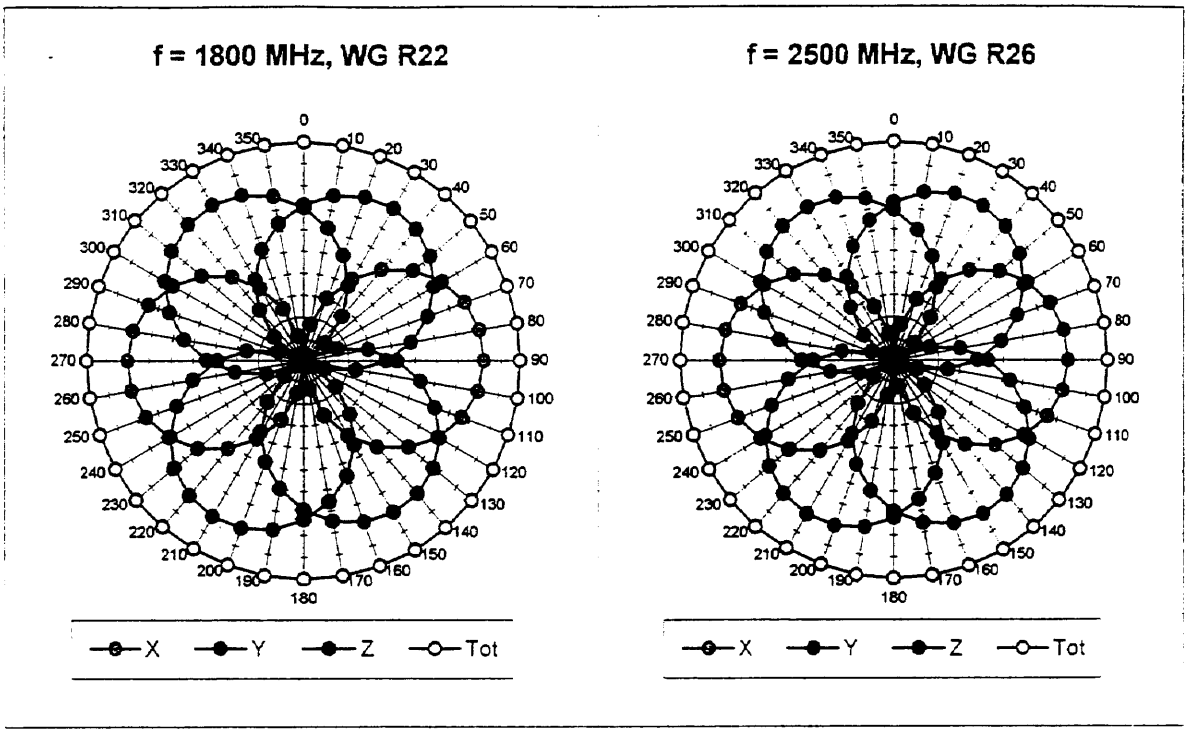


f = 300 MHz, TEM cell ifi110

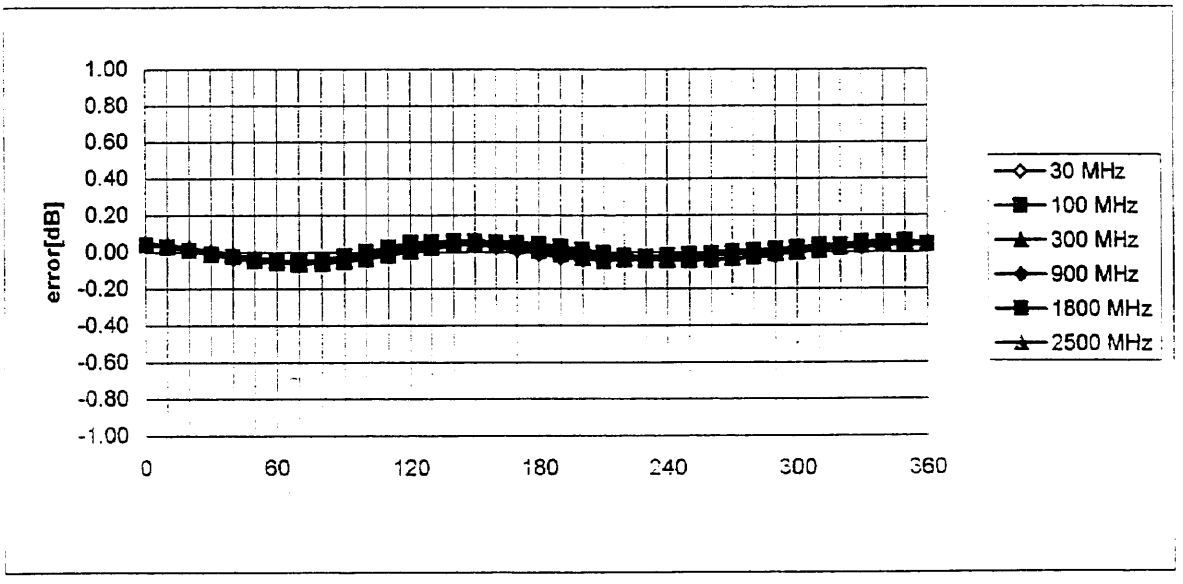


f = 900 MHz, TEM cell ifi110



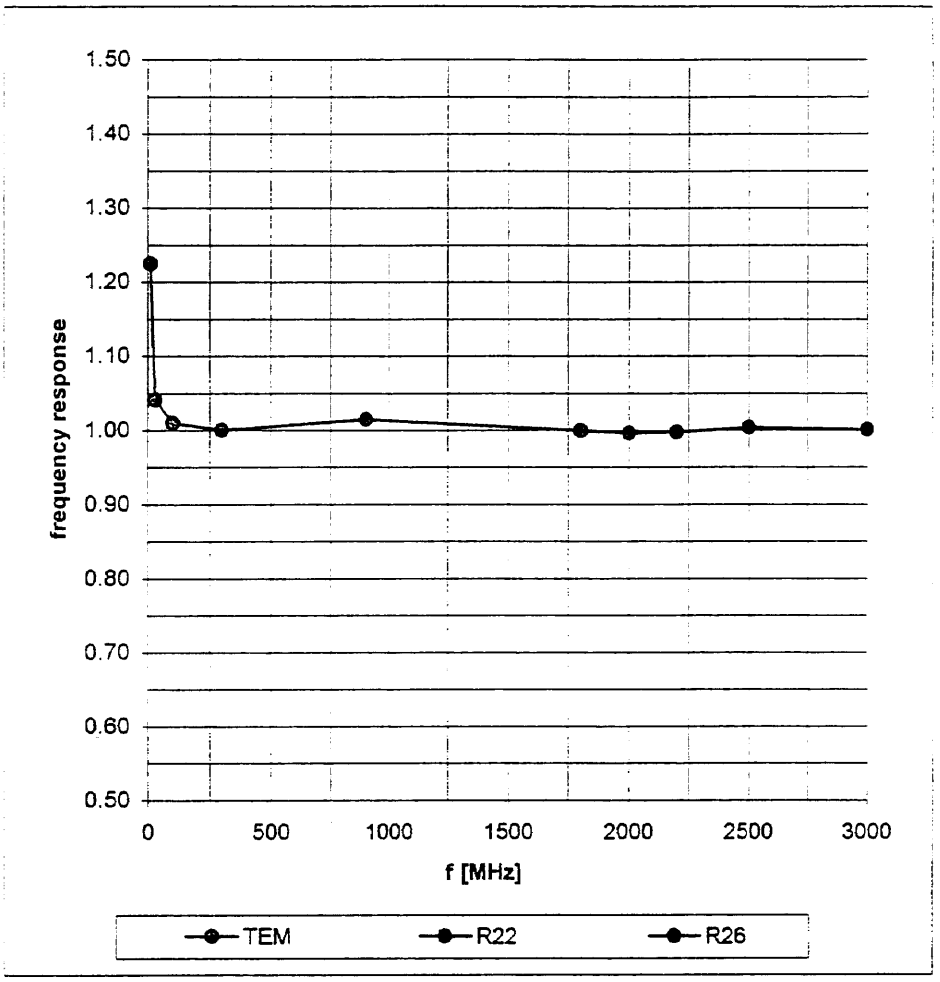


Isotropy Error (ϕ), θ = 0°



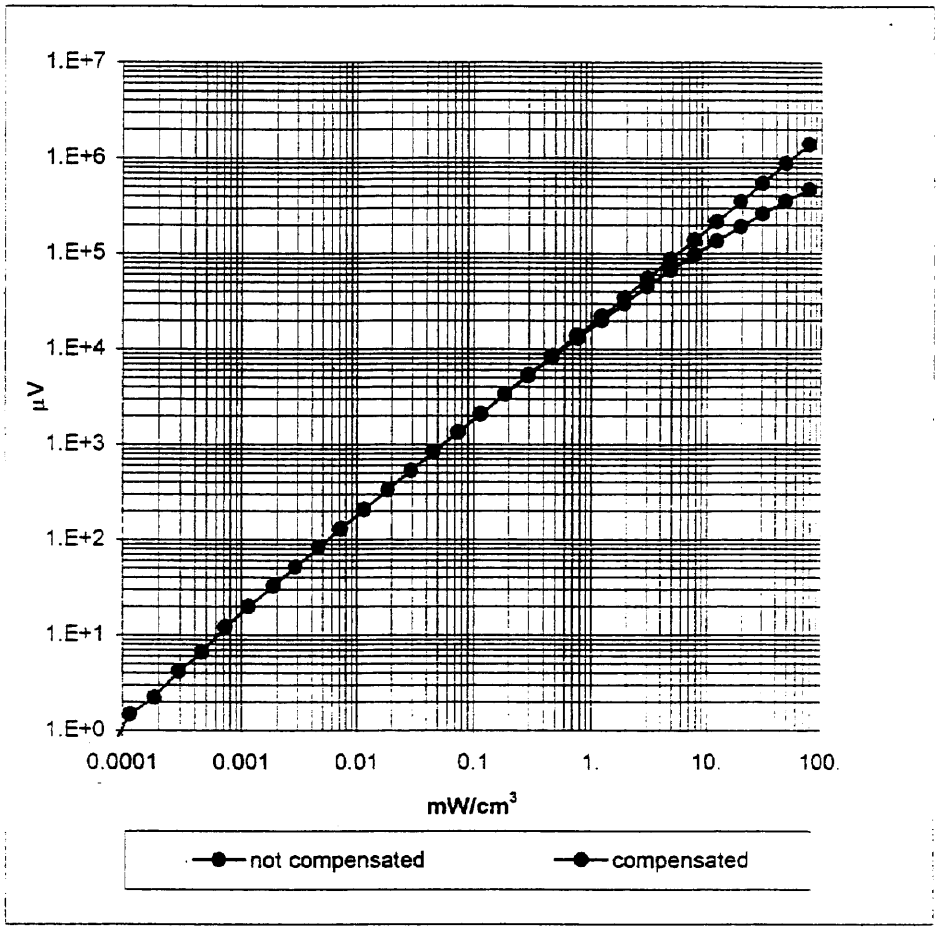
Frequency Response of E-Field

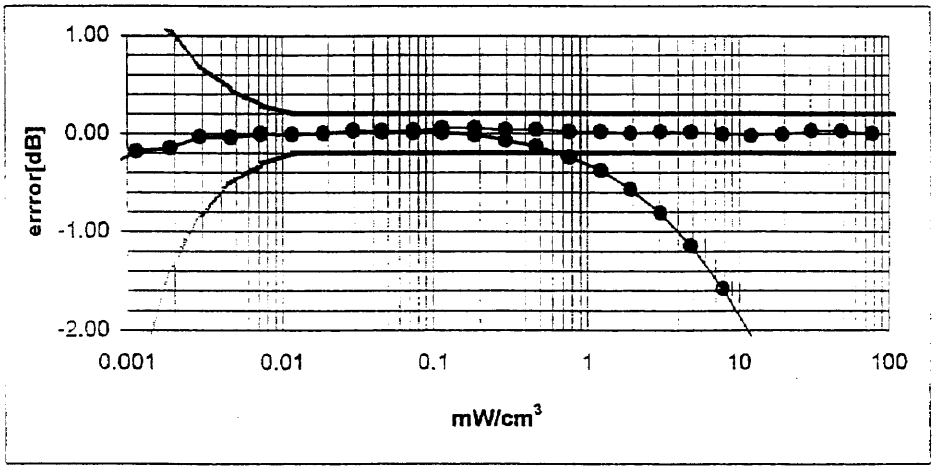
(TEM-Cell:ifi110, Waveguide R22, R26)



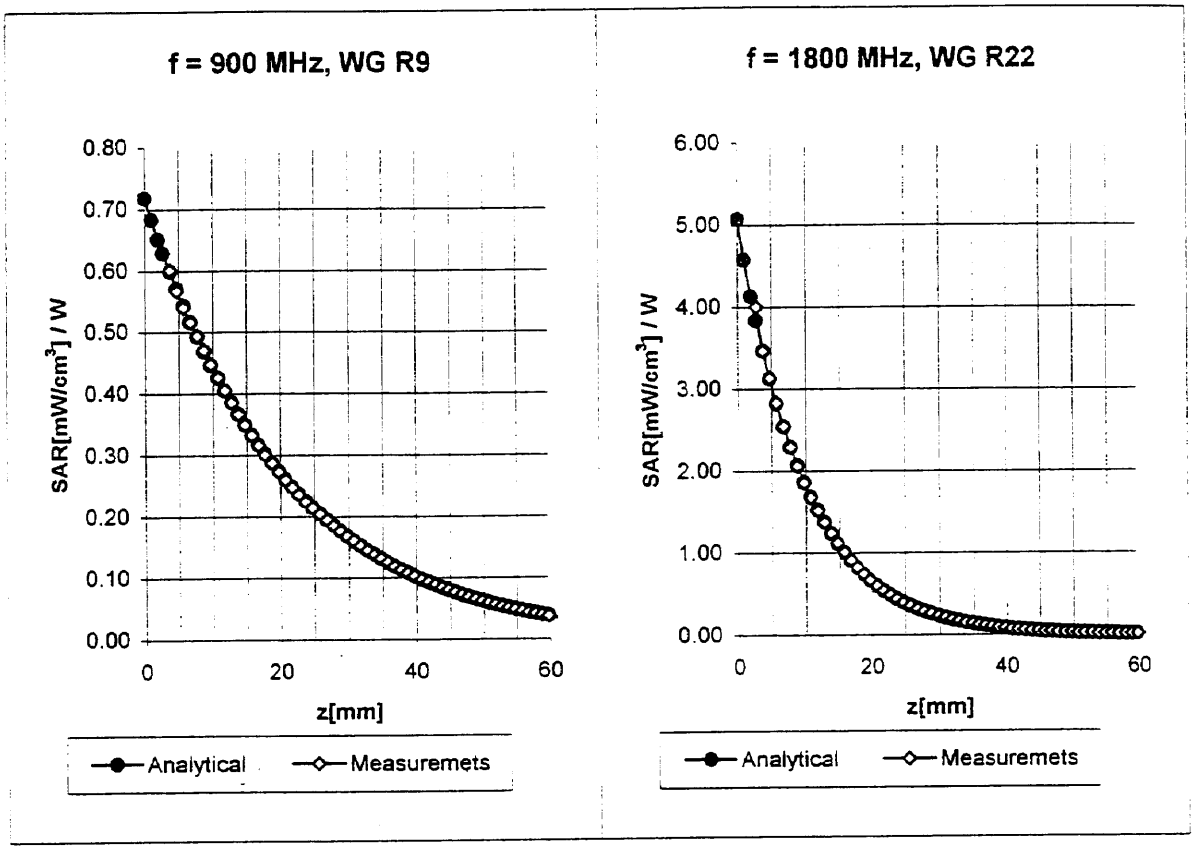
Dynamic Range f(SAR_{brain})

(TEM-Cell:ifi110)





Conversion Factor Assessment



Receiving Pattern (ϕ)

(in brain tissue, z = 5 mm)