Permissive Change Report

For

Mitsubishi Wireless (MCTC)

on the

TDMA/AMPS Cellular Phone
Model: T300

Test Report: 20275071
Date of Report: October 23, 2000

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

Tested by:	Xi-Ming Yang	
Reviewed by:	David Chernomordik	

Table of Contents

1.0 INTRODUCTION

1.1 Summary of Tests

Mitsubishi Wireless - Model No.: T300
FCC ID: BGBMT345XFOR6A

FCC RULE	DESCRIPTION OF TEST	RESULT
2.1046	RF Power Output	Not Applicable *
22.913, 24.232	Radiated Power: ERP, EIRP	Pass
2.1047	Modulation Requirements	Not Applicable *
22.915(d)(1)	Audio Filter Characteristics	Not Applicable *
2.1049 22.917(b)(d)	Emission Limitation, Occupied Bandwidth	Not Applicable *
2.1051, 22.917(e) 22.917(f), 24.238(a)	Out of Band Emissions at Antenna Terminals Mobile Emissions In Base Frequency Range	Not Applicable *
2.1053	Field Strength of Spurious Radiation	Not Applicable *
15.107	Line Conducted Emissions	Not Applicable *
15.109	Radiated Emissions from Digital Parts	Pass
2.1055	Frequency Stability vs. Temperature	Not Applicable *
2.1055	Frequency Stability vs. Voltage	Not Applicable *
2.1091, 2.1093	Specific Absorption Rate	Pass

* There are no changes that can effect these characteristics (see section 1.2 for details).

Test Engineer: Xi-Ming Yang Date: 10/30/00
Xi-Ming Yang

EMC Site Manager: David Chernomordik Date: 10/30/00
David Chernomordik

1.2 Justification

The Mitsubishi Wireless model T300 is a device that has already been granted by the FCC. The device has been modified by replacing the original antenna with a new antenna.

No other changes were made to the device. Therefore, no changes are expected in:

- Modulation Requirements
- Audio Filter Characteristics
- Emission Limitation, Occupied Bandwidth
- Out of Band Emissions at Antenna Terminals, Mobile Emissions In Base Frequency Range
- Field Strength of Spurious Radiation
- Line Conducted Emissions
- Frequency Stability vs. Temperature
- Frequency Stability vs. Voltage

Only Radiated Power, Radiated Emissions from Digital Parts, and Specific Absorption Rate tests were performed to confirm that the device is in compliance with FCC requirements.

1.3 Client Information

The EUT has been tested at the request of

Company: **Mitsubishi Wireless (MCTC)**
Name of contact: **Kelley McKown**
US Telephone: **858-535-8836**
US Fax: **858-535-8801**

1.4 Equipment under test (EUT)

Product Descriptions:

Equipment	AMPS/TDMA Cellular Radio Telephone		
Trade Name	Mitsubishi	Model No.	T300
FCC ID	BGBMT345XFOR6A	S/N No.	Not Labeled
Category	Portable	RF Exposure	Uncontrolled Environment
Frequency Band (uplink)	AMPS, 824-849 MHz TDMA: 1850-1910 MHz	System	AMPS TDMA

EUT Antenna Description			
Type	Helical	Configuration	Fixed
Dimensions	27.5 mm (L)	Gain	2 dBi
Location	Right, Top		

Use of Product : Voice communications

Manufacturer: Same as above.

Production is planned: Yes

EUT receive date: 9/30/00

EUT received condition: Good condition prototype

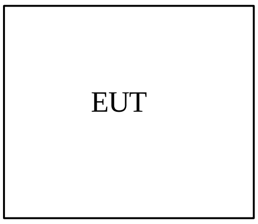
Test start date: 9/30/00

Test end date: 10/15/00

1.5 System test configuration

1.5.1 System block diagram & Support equipment

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



S:	Shielded	**U:**	Unshielded	**F:**	With Ferrite Core

Support equipment					
Equip. #	**Equipment**	**Manufacturer**	**Model #**	**S/N #**	**FCC ID**
None	-	-	-	-	-

2.0 RADIATED POWER

FCC 22.913
The Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

FCC 24.232
The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

2.1 Test Procedure

The EUT was positioned on a non-conductive turntable, 0.8m above the ground plane on an open test site. The radiated emission at the fundamental frequency was measured at 3m distance with a test antenna and spectrum analyzer. During the measurement, the resolution and video bandwidths of the spectrum analyzer were set to 100 kHz (for frequencies below 1 GHz) and 1 MHz (for frequencies above 1 GHz).

Worst case emission was recorded with the rotation of the turntable and the raising and lowering of the test antenna. The spectrum analyzer reading was recorded and the field strength (E in dBuV/m) was calculated. ERP & EIRP in dBm were calculated as follows:

$$ERP = E - 97.4; EIRP = E - 95.3$$

In addition, ERP in frequency band 824-849 MHz was measured using a substitution method. The EUT was replaced by half-wave dipole connected to a signal generator. The spectrum analyzer reading was recorded and ERP was calculated as follows:

$$ERP = R_1 - R_2 + V_g,$$

where R_1 & R_2 are spectrum analyzer readings in dBuV when measured field strength from EUT & generator accordingly; V_g is the generator output in dBm

2.2 Test Equipment

Hewlett Packard HP8566B Spectrum Analyzer
EMCO 3148 Log Periodic Antenna
EMCO 3115 Horn Antenna
CDI Robert’s Antenna
Rohde & Schwarz SMH 44 signal generator

2.3 Test Results

Job No: 20027507
Company: Mitsubishi

MODEL: T300
Engineer: Xi-Ming Yang

Radiated Power
(Substitution Method)
PCS Band

Frequency	Antenna Polarization	Field Strength (EUT)	Field Strength (Sig. Gen + Tr. Antenna)	Sig. Gen. Power &G(Tr. Ant.)	EIRP
MHz	H/V	dB(uV/m)	dB(uV/m)	dBm	dBm
1850	V	122.1	111.7	15.3	25.7
1880	V	121.8	110.3	14.8	26.3
1910	V	122.1	110.4	15.1	26.8

Test was performed at 3m distance
EMCO 3115 Horn Antenna was used

2.3 Test Results

Job No: **20027507**
Company: **Mitsubishi**

MODEL: **T300**
Engineer: **Xi-Ming Yang**

Radiated Power
(Substitution Method)
Cell Band AMPS

Frequency	Antenna Polarization	Spec.Anlzr Reading (EUT)	Spec.Anlzr Reading Signal Gen & Tuned Dipole	Signal Generator Power	Effective Radiated Power (EUT)
MHz	H/V	dB(uV)	dB(uV)	dBm	dBm
824	V	100.5	83.5	8.8	25.8
836	V	100.9	83.8	8.8	25.9
849	V	100.8	83.7	8.8	25.7

Test was performed at 3m distance

Radiated Power
(Substitution Method)
Cell Band TDMA

Frequency	Antenna Polarization	Spec.Anlzr Reading (EUT)	Spec.Anlzr Reading Signal Gen & Tuned Dipole	Signal Generator Power	Effective Radiated Power (EUT)
MHz	H/V	dB(uV)	dB(uV)	dBm	dBm
824	V	102.6	83.5	8.8	27.9
836	V	103.0	83.8	8.8	28.0
849	V	102.9	83.7	8.8	27.8

Test was performed at 3m distance

3.0 RADIATED EMISSIONS FROM DIGITAL PARTS

3.1 Test Procedure

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT.

3.2 Test Equipment

EMCO 3115 Horn Antenna
HP 8566B Spectrum Analyzer
Tektronix 2782 Spectrum Analyzer
Preamplifier

3.3 Test Results

Radiated Emissions Test Data												
Company: Mitsubishi	Mitsubishi					**Model #:T300**	T300		**Standard_**		**FCC § 15B**	
EUT:	Phone					**S/N #: Not Labeled**	N/A		**Limits** _		2	
Project #:	J20027507					**Test Date:**	October 5, 2000		**Test Distance_**		3	meter
Test Mode:	Rx					**Engineer:**	Suresh		**Duty Relaxation**		0	dB
	Antenna Used				Pre-Amp Used			Cable Used			Transducer Used	
Number:	1	8	0		8	5	0	12	0	0	0	
Model:	EMCO 3143	EMCO 3115	None		CDI_P1000	CDI_P950	None	NPS366	None	None	None	
Frequency	**Reading**	**Detector**	**Ant**	**Amp.**	**Ant. Pol.**	**Ant. Factor**	**Pre-Amp**	**Insert. Loss**	**D. C. F.**	**Net**	**Limit @3m**	**Margi**
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(µV/m)	dB(µV/m)	dB
38.90E+0	37.8	Peak	1	5	V	7.5	18.4	0.1	0.0	27.0	40.0	-13.
58.30E+0	41.5	Peak	1	5	V	5.3	18.5	0.3	0.0	28.6	40.0	-11.
155.60E+0	31.7	Peak	1	5	H	10.0	18.2	0.7	0.0	24.2	43.5	-19.
213.90E+0	40.8	Peak	1	5	H	11.1	19.5	0.9	0.0	33.3	43.5	-10.
291.70E+0	30.8	Peak	1	5	H	13.3	19.2	1.0	0.0	25.9	46.0	-20.
488.60E+0	33.7	Peak	1	5	H	17.9	17.0	1.2	0.0	35.8	46.0	-10.
1023.10E+0	37.6	Peak	8	8	V	25.0	30.3	1.9	0.0	34.2	54.0	-19.
1035.60E+0	38.4	Peak	8	8	V	25.0	30.3	1.9	0.0	35.0	54.0	-19.
1048.10E+0	37.3	Peak	8	8	V	25.0	30.3	1.9	0.0	33.9	54.0	-20.
2046.30E+0	46.9	Peak	8	8	V	29.1	29.1	3.0	0.0	49.9	54.0	-4.1
2071.30E+0	43.0	Peak	8	8	V	29.1	29.1	3.0	0.0	46.0	54.0	-8.0
2096.10E+0	46.7	Peak	8	8	V	29.1	29.1	3.0	0.0	49.7	54.0	-4.3
3069.40E+0	37.0	Peak	8	8	H	31.5	28.0	3.7	0.0	44.2	54.0	-9.8
3106.90E+0	36.2	Peak	8	8	H	31.5	28.0	3.7	0.0	43.4	54.0	-10.
3144.20E+0	37.3	Peak	8	8	H	31.5	28.0	3.7	0.0	44.5	54.0	-9.5

Notes:
a) D.C.F.:Distance Correction Factor
b) Insert. Loss (dB) = Cable A + Cable B + Cable C .
c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. - Transducer Loss - Duty Relaxation (transmitter only).
d) Negative signs (-) in Margin column signify levels below the limits.
e) All other emissions not reported are below the equipment noise floor which is at least 20 dB below the limits.

4.0 SAR EVALUATION

SAR 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 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 80^o. Please refer to figure 1 below for the position details:

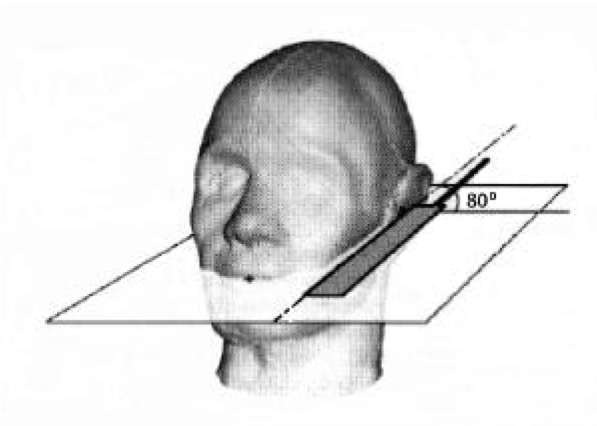


Figure 1: Intended use position

4.1 Test Condition

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

EUT Antenna	Fixed	Orientation	N/A
Usage	Left-Hand and Right-Hand	Distance between antenna axis at the joint and the liquid surface:	18.4 mm
Simulating human hand	Not Used	EUT Battery	Fully Charged
Power output	25.7 dBm on antenna port in AMPS mode, 27.5 on antenna port in TDMA mode		

The spatial peak SAR values were accessed for lowest, middle and highest operating channels defined by the manufacturer. Tests were performed at AMPS mode and TDMA mode.

Antenna port power measurement was performed, with the HP 8900D power meter, before and after the SAR tests to ensure that the EUT operated at the highest power level.

4.2 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

4.3 Configuration Photographs

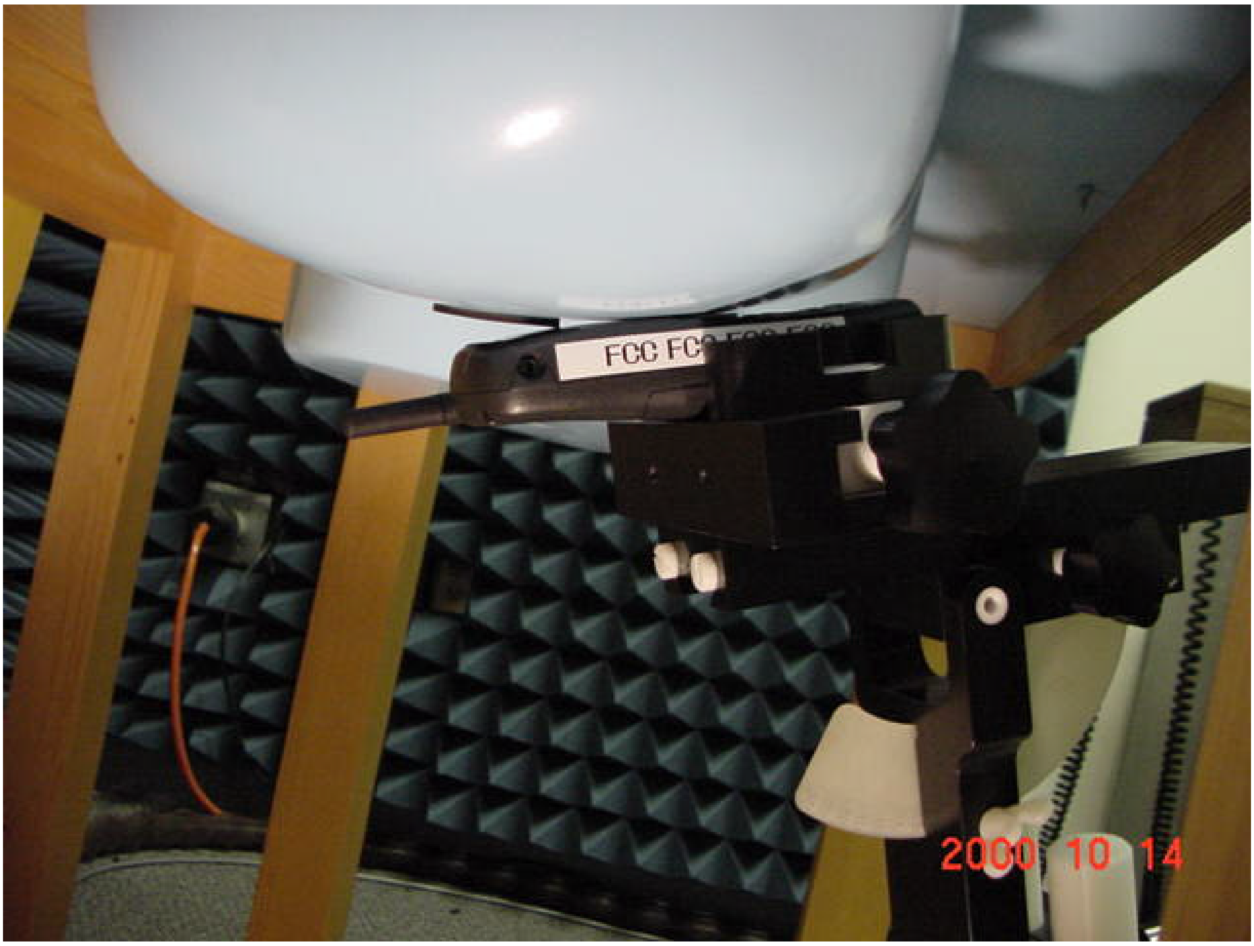
Worst-Case SAR measurement

4.3 Configuration Photographs – Continued

Worst-Case SAR Measurement

4.3 Configuration Photographs – Continued

Worst-Case SAR Measurement



4.3 Configuration Photographs – Continued

Worst-Case SAR Measurement

4.4 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.

Validation kit	Targeted SAR_{1g} (mW/g)	Measured SAR_{1g} (mW/g)
D900V2, S/N #: 013	3.92	3.81

4.5 Evaluation Procedures

The SAR evaluation was performed with the following procedures:

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

b. The SAR distribution at the exposed side of the head was measured at a distance of 4.0 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.

4.6 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:	Mitsubishi Wireless	**Model No.:**	T300
Serial No.:	Not Labeled	**Test Engineer:**	Xi-Ming Yang

TEST CONDITIONS			
Ambient Temperature	22.4 °C	Relative Humidity	51 %
Test Signal Source	Test Mode	Signal Modulation	CW
Output Power Before SAR Test	25.7 dBm (AMPS)	Output Power After SAR Test	25.7 dBm (AMPS)
Output Power Before SAR Test	27.8 dBm (TDMA, Cellular)	Output Power After SAR Test	27.8 dBm (TDMA, Cellular)
Output Power Before SAR Test	27.5 dBm (TDMA, PCS)	Output Power After SAR Test	27.5 dBm (TDMA, PCS)
Test Duration	23 Min.	Number of Battery Change	Every Scan

EUT Position: Left Hand, 2 Points Touching Phantom					
Channel MHz	Operating Mode	Duty Cycle ratio	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
849	AMPS	1	Fixed	1.24	1
837	AMPS	1	Fixed	1.01	3
824	AMPS	1	Fixed	1.31	6

EUT Position: Left Hand, 80°					
Channel MHz	Operating Mode	Duty Cycle ratio	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
849	AMPS	1	Fixed	0.784	2

EUT Position: Right Hand, 2 Points Touching Phantom					
Channel MHz	Operating Mode	Duty Cycle ratio	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
824	AMPS	1	Fixed	1.25	7

EUT Position: Body SAR					
Channel MHz	Operating Mode	Duty Cycle ratio	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
824	AMPS	1	Fixed	0.381	20
836	AMPS	1	Fixed	0.172	21
849	AMPS	1	Fixed	0.307	22

EUT Position: Left Hand, 2 Points Touching Phantom					
Channel MHz	Operating Mode	Duty Cycle ratio	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
824	TDMA	1/3	Fixed	0.77	9
837	TDMA	1/3	Fixed	0.604	11
849	TDMA	1/3	Fixed	0.616	12

EUT Position: Left Hand, 80º					
Channel MHz	Operating Mode	Duty Cycle ratio	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
824	TDMA	1/3	Fixed	0.535	10

EUT Position: Body SAR					
Channel MHz	Operating Mode	Duty Cycle ratio	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
824	TDMA	1/3	Fixed	0.222	23
836	TDMA	1/3	Fixed	0.135	24
849	TDMA	1/3	Fixed	0.149	25

EUT Position: Left Hand 80º					
Channel MHz	Operating Mode	Duty Cycle ratio	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
1850	TDMA	1/3	Fixed	1.28	16
1880	TDMA	1/3	Fixed	1.09	17
1910	TDMA	1/3	Fixed	1.02	18

EUT Position: Left Hand 2 Points Touching Phantom					
Channel MHz	Operating Mode	Duty Cycle ratio	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
1850	TDMA	1/3	Fixed	1.33	14

EUT Position: Right Hand 80º					
Channel MHz	Operating Mode	Duty Cycle ratio	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
1850	TDMA	1/3	Fixed	1.05	19

EUT Position: Body SAR					
Channel MHz	Operating Mode	Duty Cycle ratio	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
1850	TDMA	1/3	Fixed	0.207	26
1880	TDMA	1/3	Fixed	0.218	27
1910	TDMA	1/3	Fixed	0.207	28

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

4.7 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 #	LAST CAL. DATE
Robot	**Stäubi RX60L**	597412-01	N/A
	Repeatability: ± 0.025mm Accuracy: $0.806x10^{-3}$ degree Number of Axes: 6		
E-Field Probe	**ET3DV5**	1333	04/10/00
	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	09/30/00
	Please see section 6.2 for details		
Power Meter	**HP 8900D** w/ 84811A sensor	3607U00673	08/01/00
	Frequency Range: 100kHz to 18 GHz Power Range: 300µW to 3W		

4.8 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$^{3)}$
900	43.2 ± 5%	0.77 ± 10%	1000

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

Brain	
Ingredient	**Frequency** (1900 MHz)
Water	53.9 %
Sugar	44.9 %
Salt	0 %
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$^{3)}$
1900	43.5 ± 5%	1.26 ± 10%	1000

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

Muscle	
Ingredient	**Frequency** (800 – 850 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	56.1 ± 5%	0.95 ± 10%	1000

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

Muscle	
Ingredient	**Frequency** (1900 MHz)
Water	54.5 %
Sugar	44.3 %
Salt	0 %
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$^{3)}$
1900	54.4 ± 5%	1.57 ± 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.

4.9 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.

4.10 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 Uncertanties				**±11.7 %**

4.11 Measurement Traceability

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

APPENDIX A - SAR EVALUATION DATA

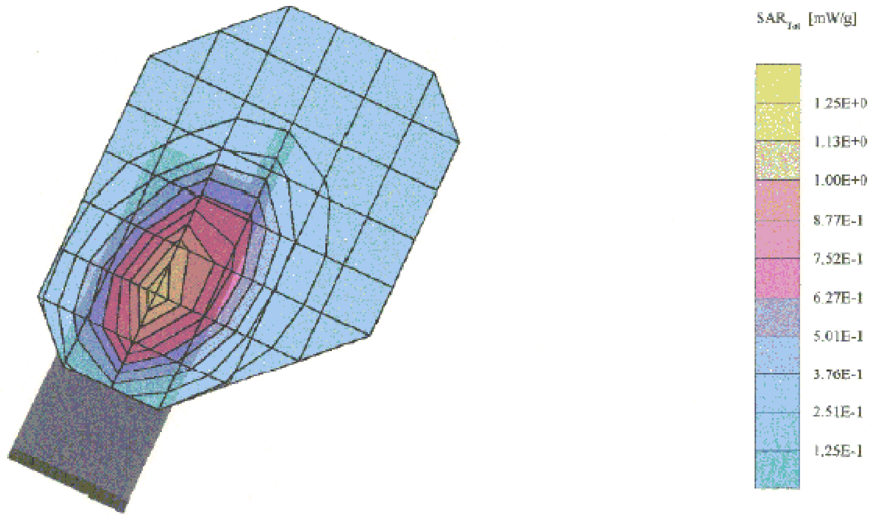
Please note that the graphical visualization of the phone position onto the SAR distribution gives only limited information on the current distribution of the device, since the curvature of the head results in graphical distortion. Full information can only be obtained either by H-field scans in free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

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

09/30/00 PLOT 1

Mitsubishi T300

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 849 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 849 MHz: σ = 0.77 mho/m ϵ_r = 43.2 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.24 mW/g, SAR (10g): 0.892 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.04 dB



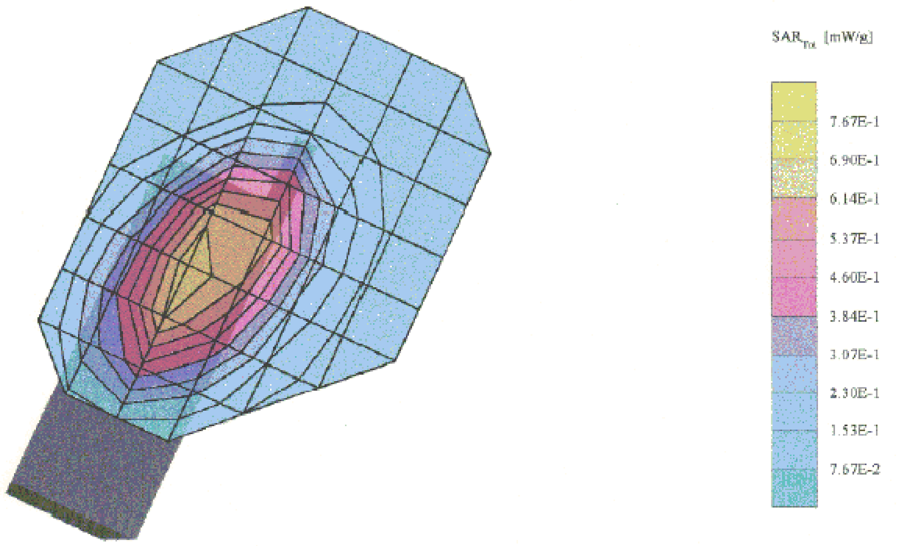
Intertek Testing Services

09/30/00

Plot 2

Mitsubishi T300

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 849 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 849 MHz: $\sigma = 0.77$ mho/m $\varepsilon_r = 43.2$ $\rho = 1.00$ g/cm³
Cube 5x5x7: SAR (1g): 0.784 mW/g, SAR (10g): 0.580 mW/g * Max outside, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.07 dB



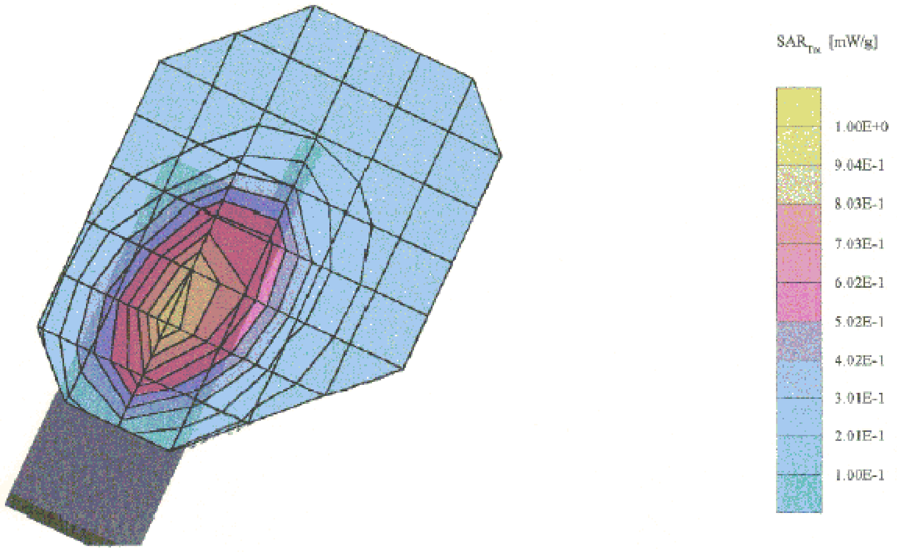
Intertek Testing Services

09/30/00

Plot 3

Mitsubishi T300

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 837 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 835 MHz: $\sigma = 0.76$ mho/m $\varepsilon_r = 43.1$ $\rho = 1.00$ g/cm³
Cube 5x5x7: SAR (1g): 1.01 mW/g, SAR (10g): 0.730 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.00 dB

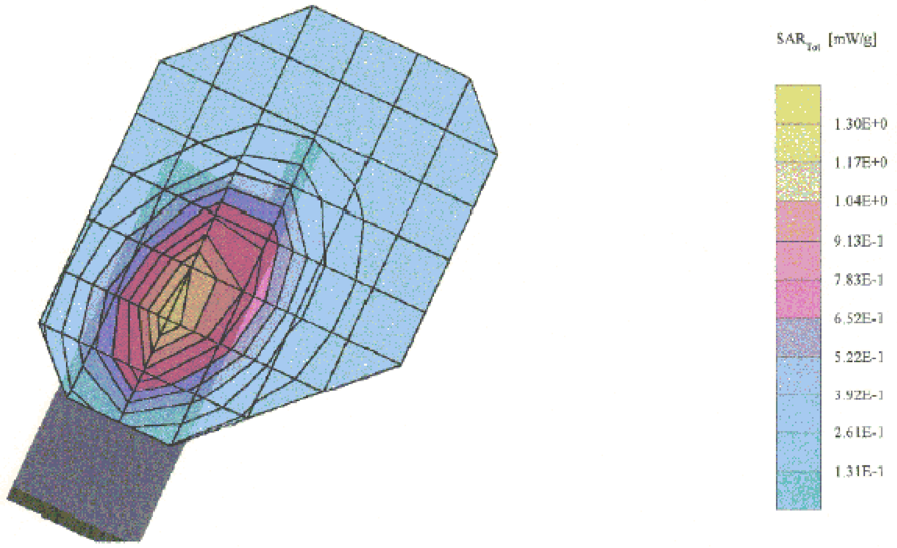


Intertek Testing Services

09/30/00

Mitsubishi T300

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 824 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 825 MHz: σ = 0.76 mho/m ε_r = 43.2 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.31 mW/g, SAR (10g): 0.943 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.01 dB

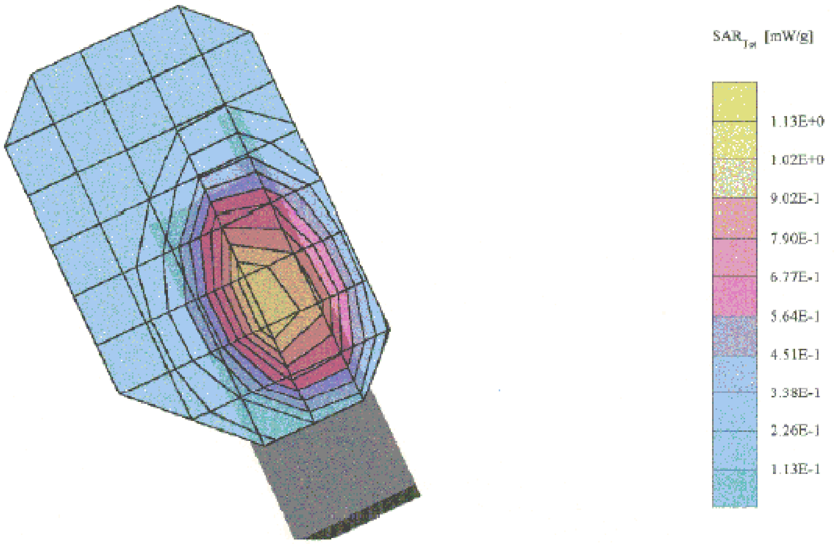


Intertek Testing Services

09/30/00

Mitsubishi T300

Generic Twin Phantom; Right Hand Section; Position: (80°,65°); Frequency: 824 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 825 MHz: σ = 0.76 mho/m ϵ_r = 43.2 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.25 mW/g, SAR (10g): 0.904 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.01 dB



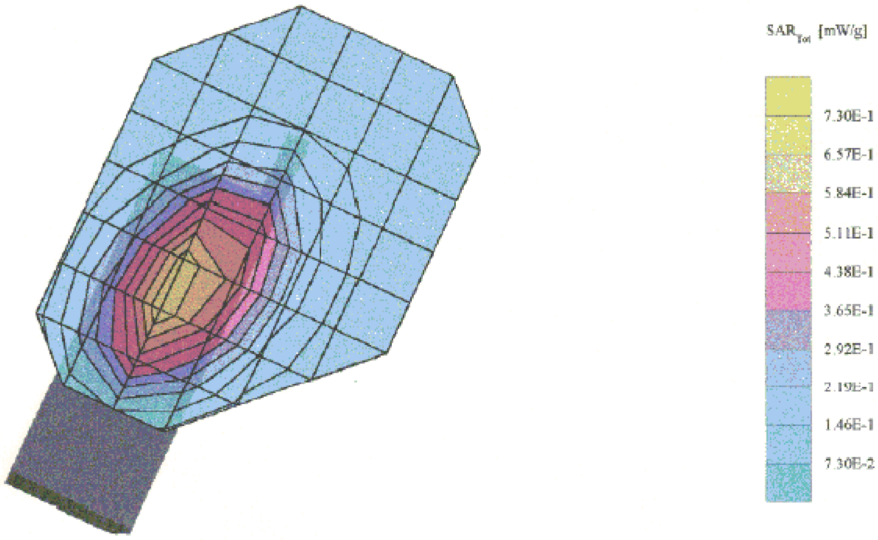
Intertek Testing Services

09/30/00

Plot 9.

Mitsubishi T300

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 824 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 3.0; Brain 825 MHz: σ = 0.76 mho/m ε_r = 43.2 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.770 mW/g, SAR (10g): 0.557 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.10 dB

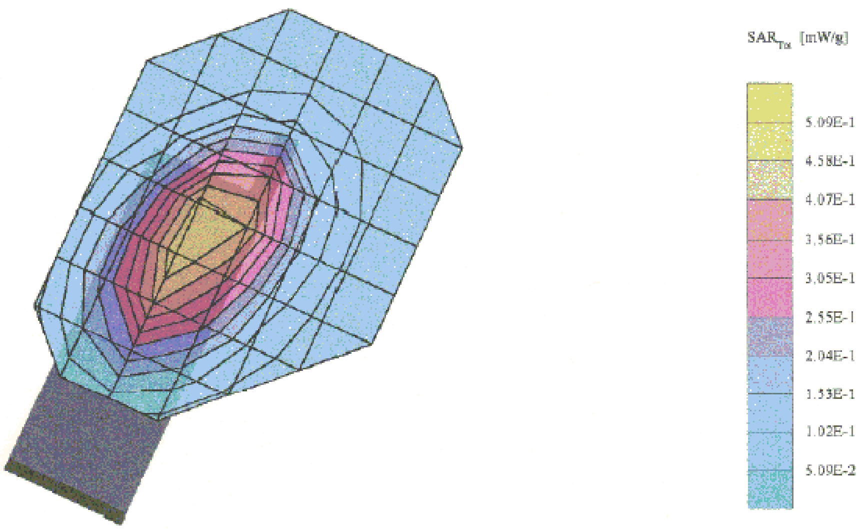


Intertek Testing Services

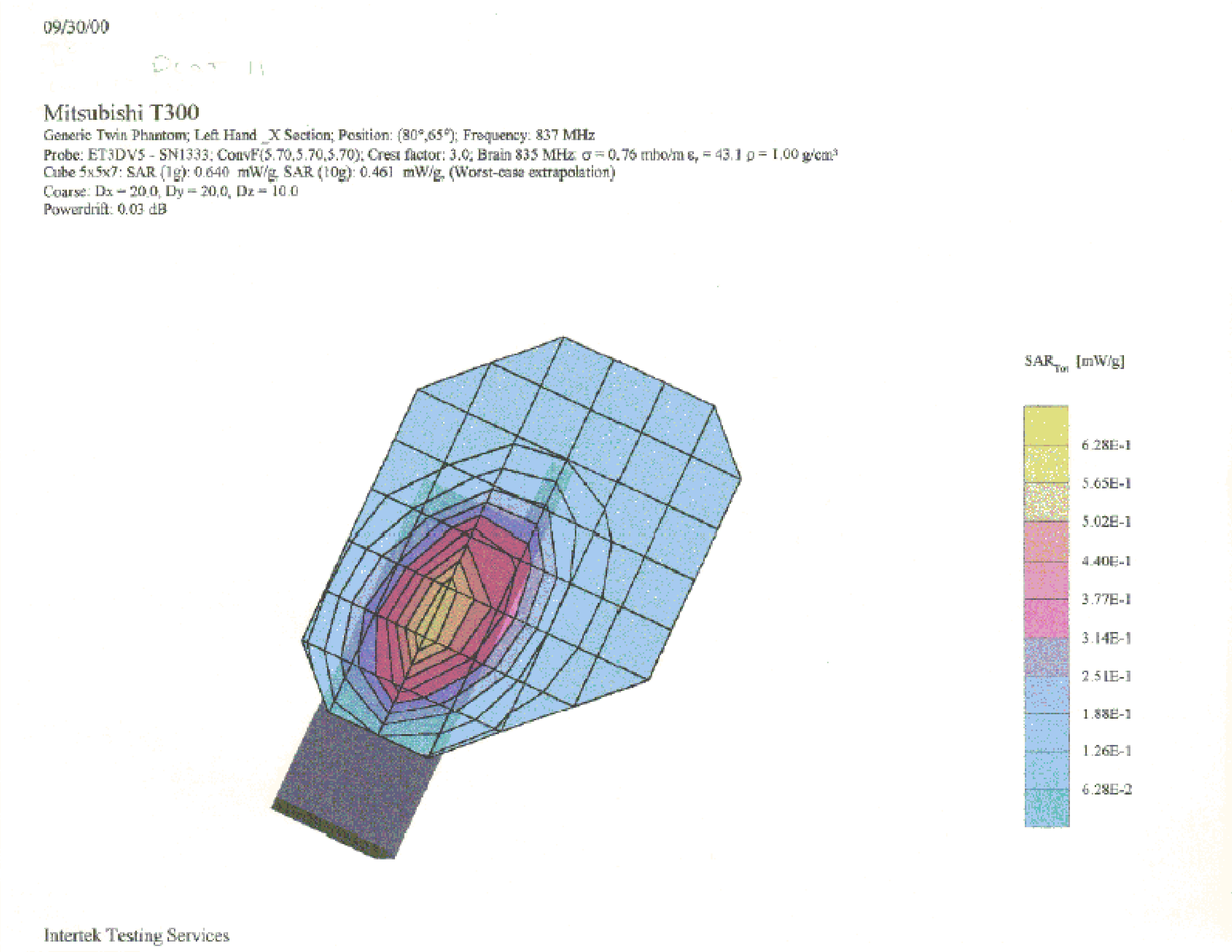
09/30/00

Mitsubishi T300

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 824 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 3.0; Brain 825 MHz: σ = 0.76 mho/m ε_r = 43.2 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.535 mW/g * , SAR (10g): 0.383 mW/g Max outside, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.08 dB



Intertek Testing Services

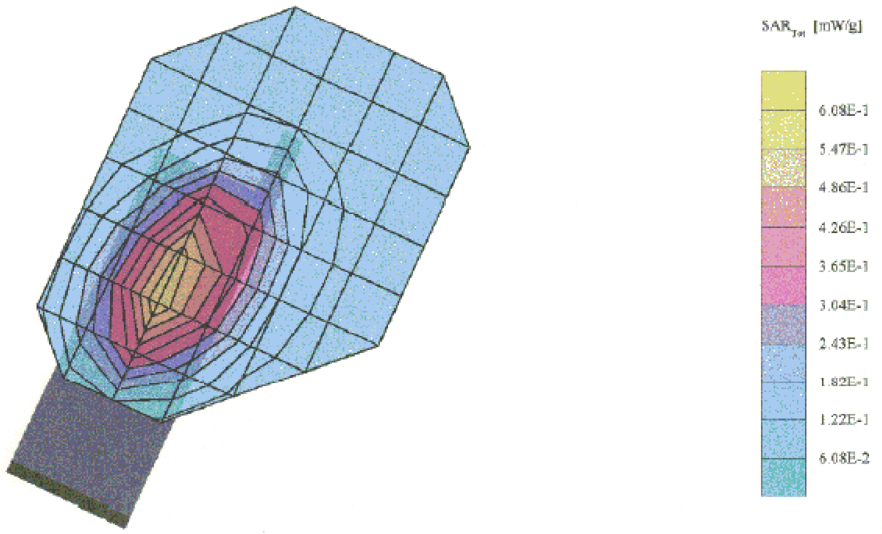

09/30/00
Mitsubishi T300
Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 837 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 3.0; Brain 835 MHz: σ = 0.76 mho/m εr = 43.1 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.640 mW/g, SAR (10g): 0.461 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.03 dB
SAR_Tot [mW/g]
6.28E-1
5.65E-1
5.02E-1
4.40E-1
3.77E-1
3.14E-1
2.51E-1
1.88E-1
1.26E-1
6.28E-2
Intertek Testing Services

09/30/00

Plot 2

Mitsubishi T300

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 849 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 3.0; Brain 849 MHz: σ = 0.77 mho/m ε_r = 43.2 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.616 mW/g, SAR (10g): 0.442 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.03 dB



Intertek Testing Services

09/30/00

PLOT 13

Mitsubishi T300

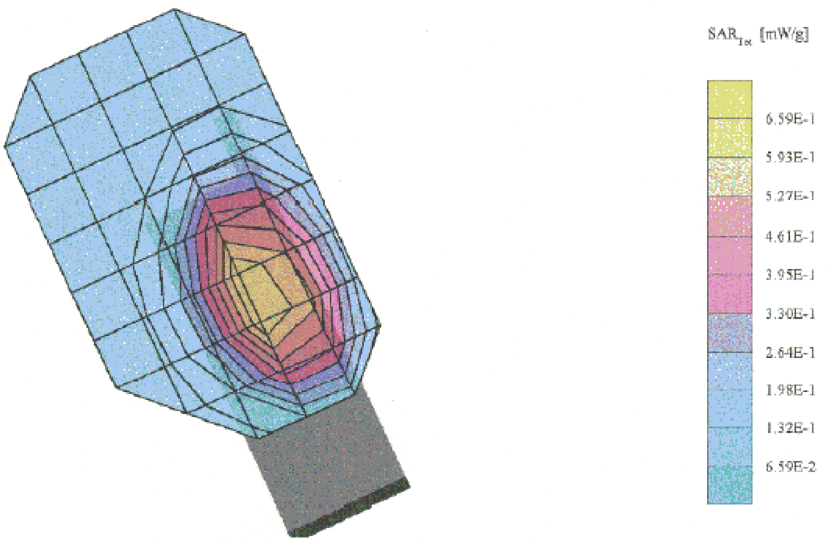
Generic Twin Phantom; Right Hand Section; Position: (80°,65°); Frequency: 824 MHz

Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 3.0; Brain 825 MHz: σ = 0.76 mho/m ϵ_r = 43.2 ρ = 1.00 g/cm³

Cube 5x5x7: SAR (1g): 0.747 mW/g, SAR (10g): 0.533 mW/g, (Worst-case extrapolation)

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

Powerdrift: 0.05 dB



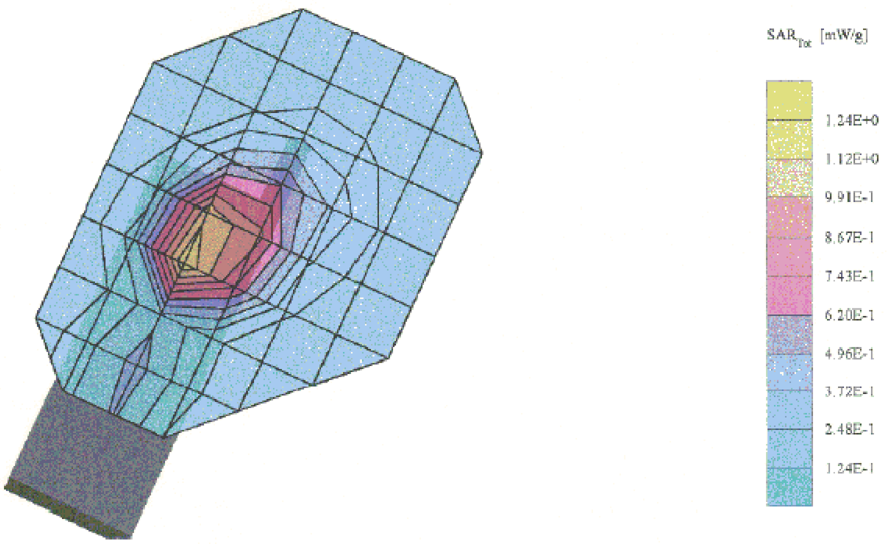
Intertek Testing Services

09/30/00

PLOT 14

Mitsubishi T300

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 1850 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Brain1880 MHz: σ = 1.26 mho/m ε_r = 43.5 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.33 mW/g, SAR (10g): 0.781 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift -0.00 dB



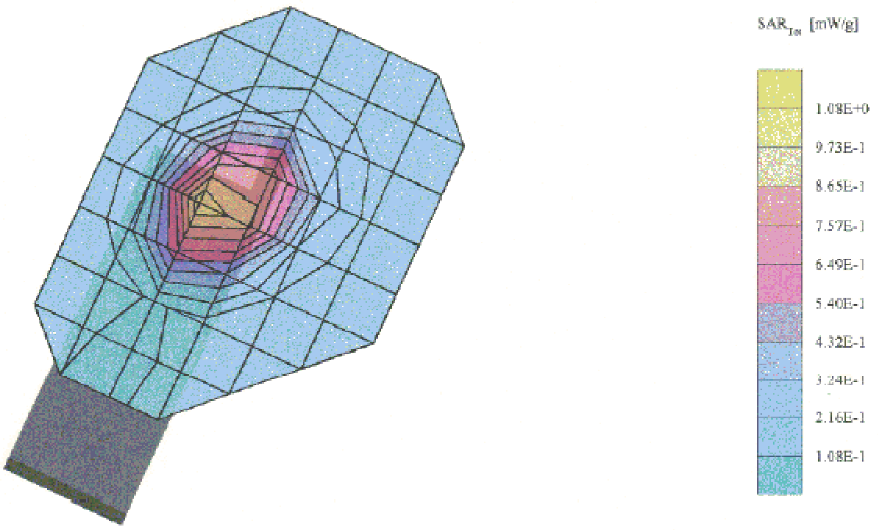
Intertek Testing Services

09/30/00

PLOT 16

Mitsubishi T300

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 1850 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Brain1880 MHz: σ = 1.26 mho/m ϵ_r = 43.5 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.28 mW/g, SAR (10g): 0.724 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.01 dB



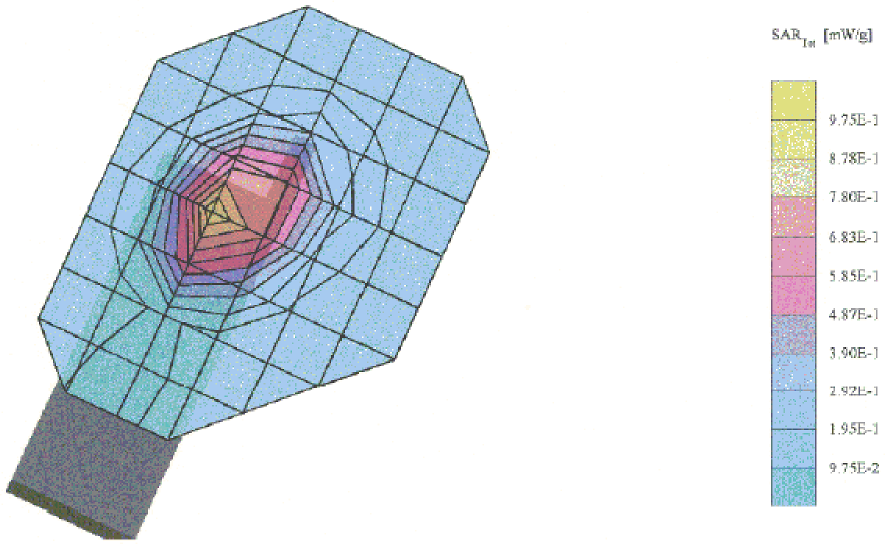
Intertek Testing Services

09/30/00

PLOT 17

Mitsubishi T300

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°), Frequency: 1880 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Brain1880 MHz: σ = 1.26 mho/m ε_r = 43.5 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.09 mW/g, SAR (10g): 0.619 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.03 dB



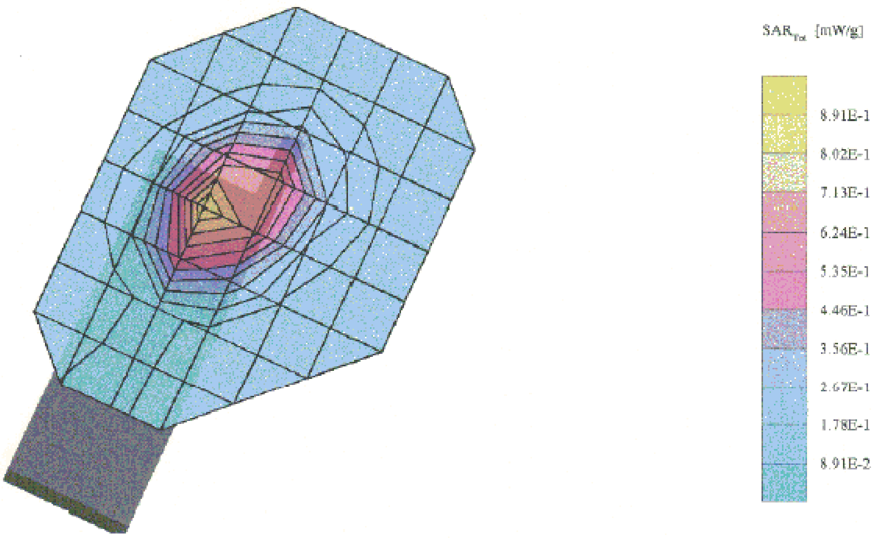
Intertek Testing Services

09/30/00

Plot 18

Mitsubishi T300

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 1910 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Brain1880 MHz: σ = 1.26 mho/m ϵ_r = 43.5 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.02 mW/g, SAR (10g): 0.573 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.07 dB



Intertek Testing Services

09/30/00

Plot 19

Mitsubishi T300

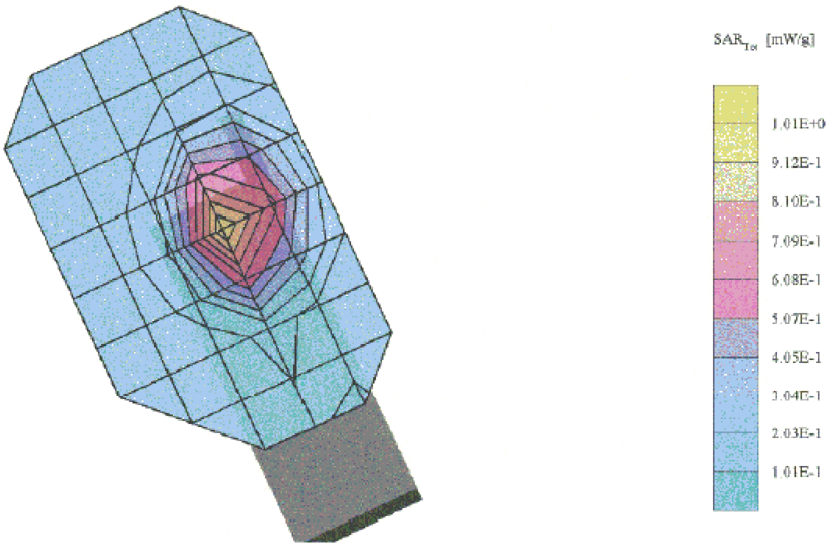
Generic Twin Phantom; Right Hand Section; Position: (80°,65°); Frequency: 1850 MHz

Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Brain1880 MHz: σ = 1.26 mho/m ϵ_r = 43.5 ρ = 1.00 g/cm³

Cube 5x5x7: SAR (1g): 1.05 mW/g, SAR (10g): 0.601 mW/g, (Worst-case extrapolation)

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

Powerdrift: -0.09 dB



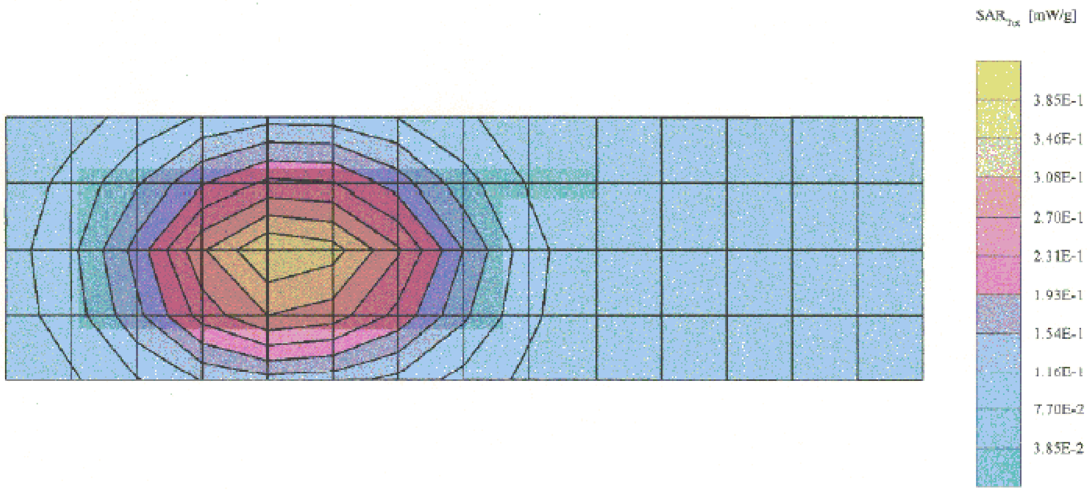
Intertek Testing Services

10/01/00

PLOT 20

Mitsubishi T300

Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 824 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Muscle 835 MHz: σ = 0.95 mho/m ϵ_r = 56.1 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.381 mW/g, SAR (10g): 0.277 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.01 dB



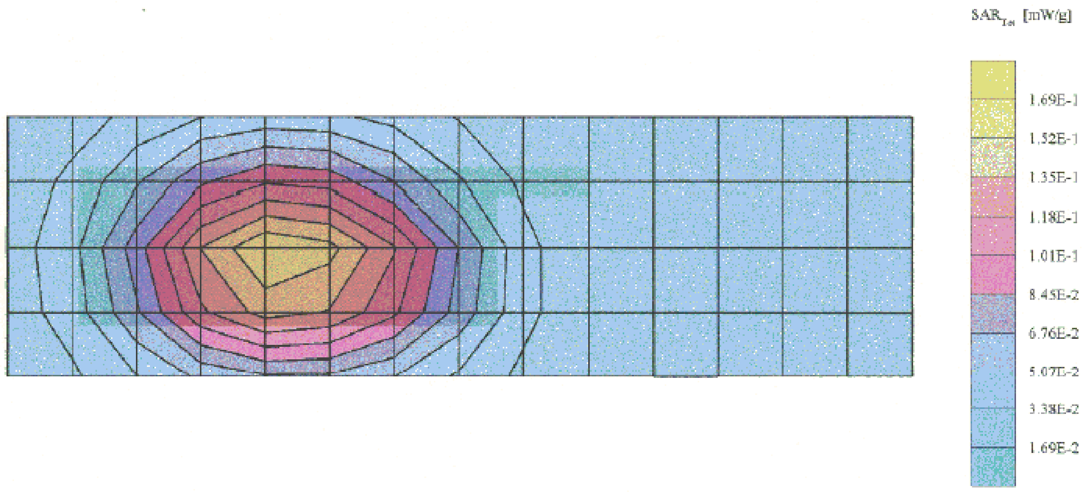
Intertek Testing Services

10/01/00

PLOT 21

Mitsubishi T300

Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 836 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Muscle 835 MHz: σ = 0.95 mho/m ε_r = 56.1 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.172 mW/g, SAR (10g): 0.125 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.04 dB



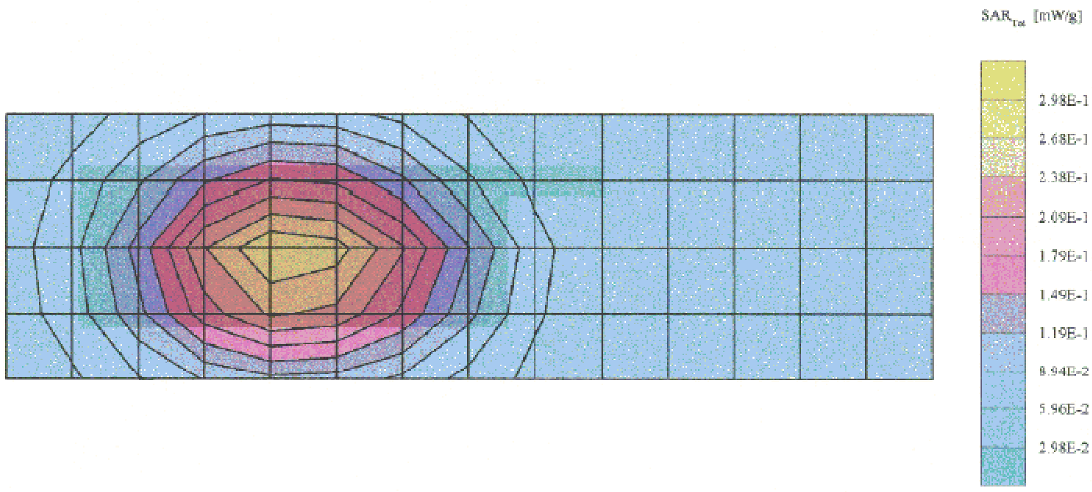
Intertek Testing Services

10/01/00

PLOT 22

Mitsubishi T300

Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 849 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Muscle 835 MHz: σ = 0.95 mho/m ε_r = 56.1 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.307 mW/g, SAR (10g): 0.221 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.15 dB



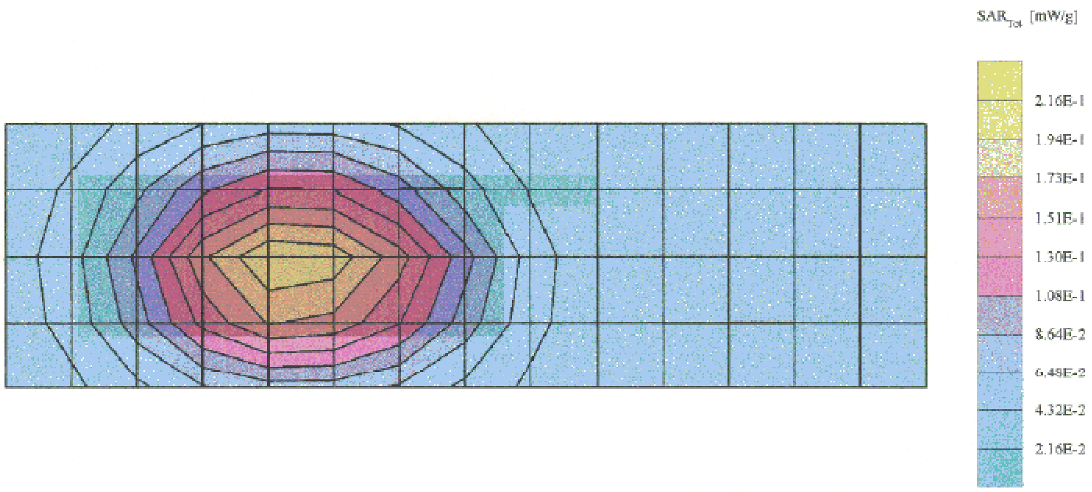
Intertek Testing Services

10/01/00

Plot 23

Mitsubishi T300

Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 824 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 3.0; Muscle 835 MHz: σ = 0.95 mho/m ϵ_r = 56.1 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.222 mW/g, SAR (10g): 0.160 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.13 dB



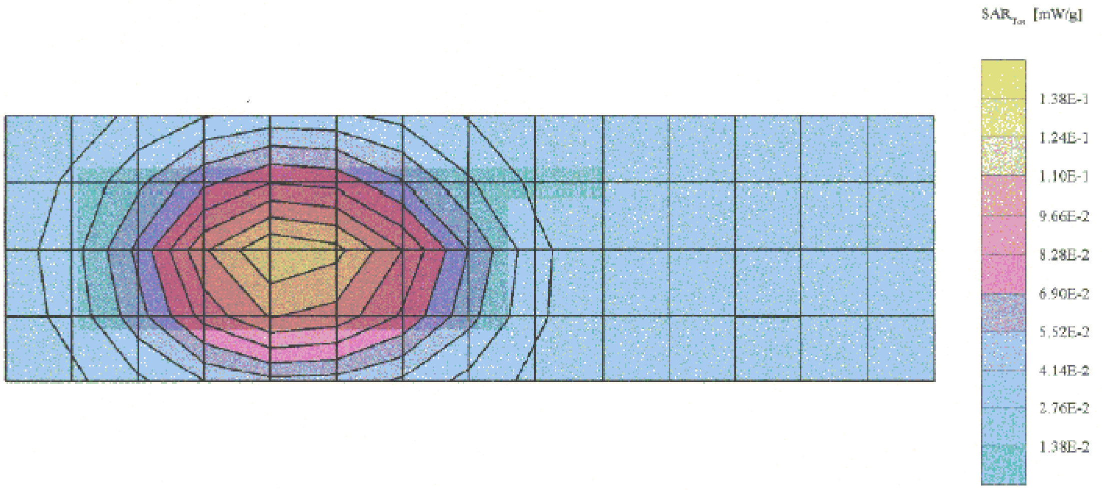
Intertek Testing Services

10/01/00

Plot 24

Mitsubishi T300

Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 836 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 3.0; Muscle 835 MHz: σ = 0.95 mho/m ε_r = 56.1 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.135 mW/g, SAR (10g): 0.0982 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.19 dB



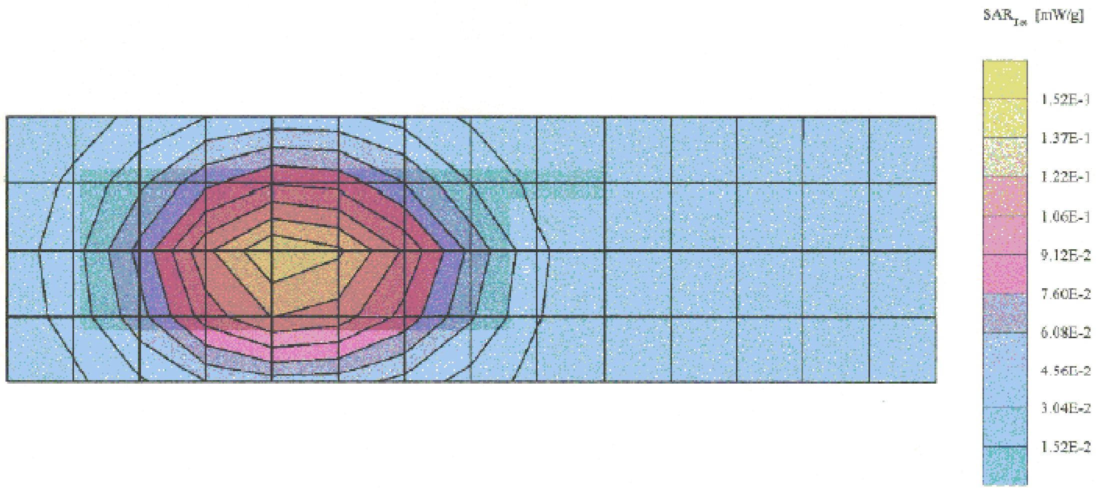
Intertek Testing Services

10/01/00

PLOT 25

Mitsubishi T300

Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 849 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 3.0; Muscle 835 MHz: $\sigma = 0.95$ mho/m $\varepsilon_r = 56.1$ $\rho = 1.00$ g/cm³
Cube 5x5x7: SAR (1g): 0.149 mW/g, SAR (10g): 0.107 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.15 dB



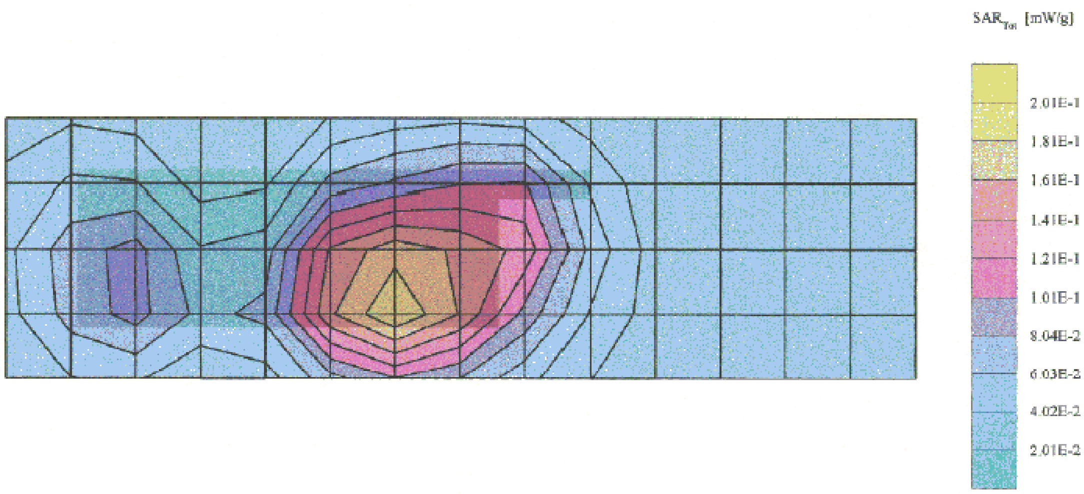
Intertek Testing Services

10/01/00

PLOT 26

Mitsubishi T300

Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 1850 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Muscle 1880 MHz: $\sigma = 1.57$ mho/m $\varepsilon_r = 54.4$ $\rho = 1.00$ g/cm³
Cube 5x5x7: SAR (1g): 0.207 mW/g, SAR (10g): 0.128 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.12 dB



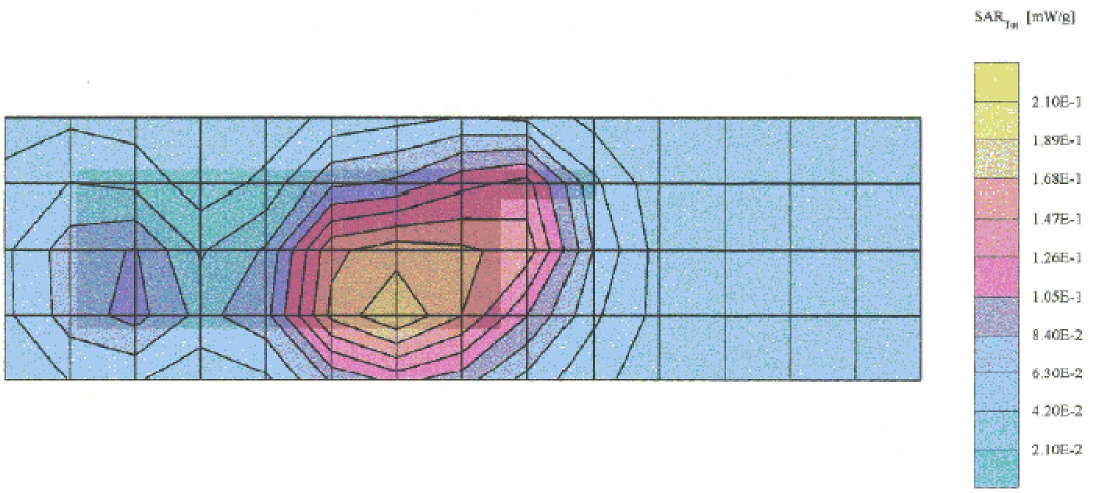
Intertek Testing Services

10/01/00

PLOT 27

Mitsubishi T300

Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 1880 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Muscle 1880 MHz: σ = 1.57 mho/m ε_r = 54.4 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.218 mW/g, SAR (10g): 0.134 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.12 dB



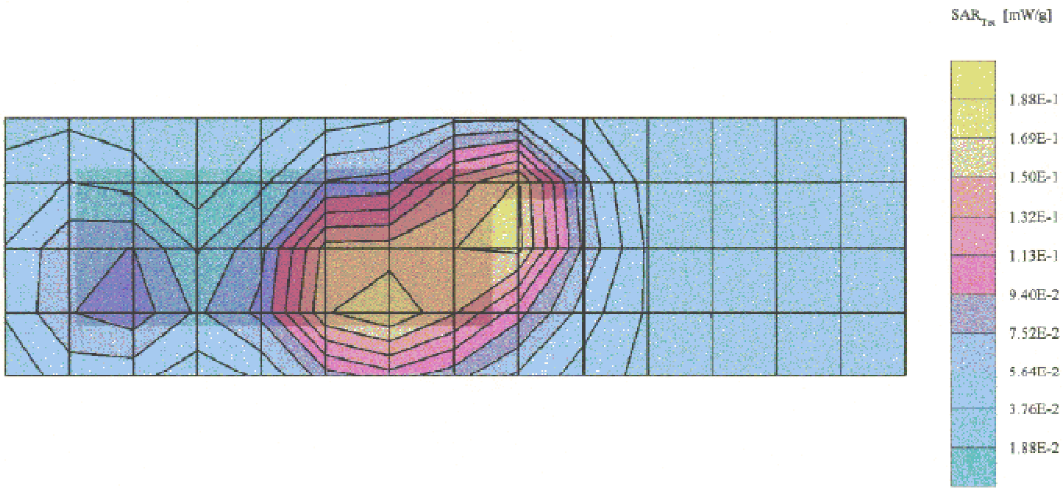
Intertek Testing Services

10/01/00

PLOT 28

Mitsubishi T300

Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 1910 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Muscle 1880 MHz: $\sigma = 1.57$ mho/m $\varepsilon_r = 54.4$ $\rho = 1.00$ g/cm^3
Cube 5x5x7: SAR (1g): 0.207 mW/g, SAR (10g): 0.121 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.09 dB



Intertek Testing Services