

## **CERTIFICATE OF COMPLIANCE** **SAR EVALUATION**

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### **Applicant Information:**

#### **WIDE TELECOM INC.**

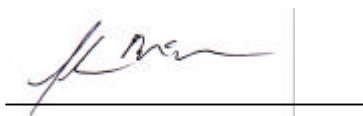
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<b>FCC ID:</b>	<b>NPWWSH-100</b>
<b>Model(s):</b>	<b>WSH-100</b>
<b>Equipment Type:</b>	<b>Dual Mode AMPS/CDMA Cellular Phone</b>
<b>FCC Classification:</b>	<b>Licensed Non-Broadcast Transmitter Held to Ear (TNE)</b>
<b>FCC Rule Part(s):</b>	<b>2.1093; ET Docket 96.326</b>
<b>Tx Frequency Range:</b>	<b>824.04 - 848.97 MHz (AMPS)</b> <b>824.70 - 848.31 MHz (CDMA)</b>
<b>Rx Frequency Range:</b>	<b>869.04 - 893.97 MHz (AMPS)</b> <b>869.70 - 893.31 MHz (CDMA)</b>
<b>Max. RF Output Power:</b>	<b>0.204 Watts ERP (AMPS)</b> <b>0.190 Watts ERP (CDMA)</b>

This wireless mobile and/or portable device has been shown to be compliant for localized Specific Absorption Rate (SAR) for uncontrolled environment/general exposure limits specified in ANSI/IEEE Std. C95.1-1992 and had been tested in accordance with the measurement procedures specified in ANSI/IEEE Std. C95.3-1999. (See test report).

I attest to the accuracy of data. All measurements were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Celltech Research Inc. certifies that no party to this application has been denied FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 853(a).



**Shawn McMillen**  
**General Manager**  
**Celltech Research Inc.**



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## 1.0 INTRODUCTION

This measurement report shows compliance of the WIDE TELECOM INC. Model: WSH-100 Dual-Mode AMPS/CDMA Cellular Phone FCC ID: NPWWSH-100 with FCC Part 2.1093, ET Docket 96-326 Rules for mobile and portable devices. The test procedures, as described in American National Standards Institute C95.1-1992 (1), FCC OET Bulletin 65-1997 were employed. A description of the product and operating configuration, detailed summary of the test results, methodology and procedures used in the evaluation, equipment used, and the various provisions of the rules are included within this test report.

## 2.0 DESCRIPTION of Equipment Under Test (EUT)

<b>EUT Type</b>	Dual-Mode Cellular Phone	<b>FCC ID</b>	NPWWSH-100
<b>FCC Equipment Class</b>	Licensed Non-Broadcast Transmitter Held to Ear (TNE)	<b>Model No.(s)</b>	WSH-100
<b>FCC Rule Part(s)</b>	§ 2.1093, Docket 96-326	<b>Application Type</b>	Part 22 Certification
<b>Tx Frequency Range (MHz)</b>	824.04 – 848.97 (AMPS) 824.70 - 848.31 (CDMA)	<b>S/N No.</b>	Pre-production
<b>Rx Frequency Range (MHz)</b>	869.04 - 893.97 (AMPS) 869.70 - 893.31 (CDMA)	<b>Max. RF Output Power</b>	0.204 W ERP (AMPS) 0.190 W ERP (CDMA)
<b>Modulation(s)</b>	AMPS / CDMA	<b>Battery Type(s)</b>	3.7V Li-ion Medium B1-LIM or 3.6V Li-ion Slim B1-LPS
<b>Antenna Type</b>	Retractable Whip	<b>Antenna Length</b>	108 mm

### **3.0 SAR MEASUREMENT SYSTEM**

Celltech Research SAR measurement facility utilizes the Dosimetric Assessment System (DASY™) manufactured by Schmid & Partner Engineering AG (SPEAG™) of Zurich, Switzerland. The DASY system is comprised of the robot controller, computer, near-field probe, probe alignment sensor, and the generic twin phantom containing brain or muscle equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF). A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The Staubli robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card. The DAE3 utilizes a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe-mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer.



DASY3 SAR Measurement System

#### 4.0 MEASUREMENT SUMMARY

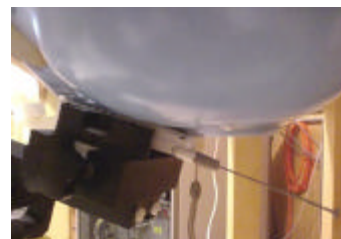
The measurement results were obtained with the EUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum SAR location of the EUT are reported in Appendix A.

#### HEAD SAR TEST RESULTS – AMPS MODE

Frequency (MHz)	Channel	Modulation	Conducted Power (dBm)	Battery Type	Phantom Position	Antenna Position	SAR (w/kg)
824.04	991	AMPS	24.0	Standard	Left Ear	Retracted	1.36
824.04	991	AMPS	24.0	Standard	Left Ear	Extended	1.42
836.49	383	AMPS	24.0	Standard	Left Ear	Retracted	1.38
836.49	383	AMPS	24.0	Standard	Left Ear	Extended	1.41
848.97	799	AMPS	23.7	Standard	Left Ear	Retracted	1.49
848.97	799	AMPS	23.7	Standard	Left Ear	Extended	1.31
848.97	799	AMPS	23.7	Extended	Left Ear	Retracted	1.43
848.97	799	AMPS	23.7	Extended	Left Ear	Extended	1.21
836.49	383	AMPS	24.0	Standard	Right Ear	Retracted	1.15
833.49	383	AMPS	24.0	Standard	Right Ear	Extended	1.01
Mixture Type: BRAIN Dielectric Constant: 41.5 Conductivity: 0.90		ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population BRAIN: 1.6 W/kg (averaged over 1 gram)					

Notes:

1. The SAR values found are below the maximum limit of 1.6 w/kg.
2. The worst-case head SAR value found was 1.49 w/kg.



Head SAR Test Setup

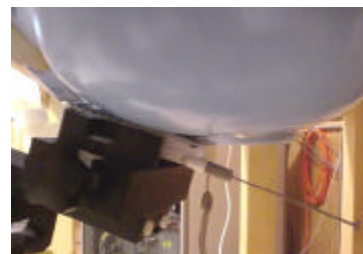
**MEASUREMENT SUMMARY (CONT.)**

**HEAD SAR TEST RESULTS – CDMA MODE**

Frequency (MHz)	Channel	Modulation	Conducted Power (dBm)	Battery Type	Phantom Position	Antenna Position	SAR (w/kg)
824.70	1013	CDMA	23.7	Standard	Left Ear	Retracted	1.32
824.70	1013	CDMA	23.7	Standard	Left Ear	Extended	1.27
835.89	363	CDMA	23.7	Standard	Left Ear	Retracted	1.39
835.89	363	CDMA	23.7	Standard	Left Ear	Extended	1.29
848.31	777	CDMA	23.6	Standard	Left Ear	Retracted	1.38
848.31	777	CDMA	23.6	Standard	Left Ear	Extended	1.31
848.31	777	CDMA	23.6	Extended	Left Ear	Retracted	1.37
848.31	777	CDMA	23.6	Extended	Left Ear	Extended	1.12
835.89	363	CDMA	23.7	Standard	Right Ear	Retracted	1.13
835.89	363	CDMA	23.7	Standard	Right Ear	Extended	1.07
<b>Mixture Type: BRAIN</b> <b>Dielectric Constant: 41.5</b> <b>Conductivity: 0.90</b>		<b>ANSI / IEEE C95.1 1992 - SAFETY LIMIT</b> <b>Spatial Peak Uncontrolled Exposure/General Population</b> <b>BRAIN: 1.6 W/kg (averaged over 1 gram)</b>					

Notes:

1. The SAR values found are below the maximum limit of 1.6 w/kg.
2. The worst-case head SAR value found was 1.39 w/kg.



Head SAR Test Setup

**MEASUREMENT SUMMARY (CONT.)**

**BODY SAR TEST RESULTS – AMPS MODE**

Frequency (MHz)	Channel	Modulation	Conducted Power (dBm)	Battery Type	Separation Distance (cm)	Antenna Position	SAR (w/kg)
824.04	991	AMPS	24.0	Standard	1.0	Retracted	0.382
824.04	991	AMPS	24.0	Standard	1.0	Extended	0.335
836.49	383	AMPS	24.0	Standard	1.0	Retracted	0.376
836.49	383	AMPS	24.0	Standard	1.0	Extended	0.355
848.97	799	AMPS	23.7	Standard	1.0	Retracted	0.477
848.97	799	AMPS	23.7	Standard	1.0	Extended	0.362
848.97	799	AMPS	23.7	Extended	1.0	Retracted	0.380
848.97	799	AMPS	23.7	Extended	1.0	Extended	0.364
Mixture Type: Muscle Dielectric Constant: 56.1 Conductivity: 0.95			ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population BODY: 1.6 W/kg (averaged over 1 gram)				

Notes:

1. The SAR values found are below the maximum limit of 1.6 w/kg.
2. The worst-case body SAR value found was 0.477 w/kg.
3. The EUT was tested for body SAR using the supplied Wide Telecom body holster, which provided a separation distance of 1.0cm between the back of the phone and the outer surface of the planar phantom.



Body SAR Test Setup



**MEASUREMENT SUMMARY (CONT.)**

**BODY SAR TEST RESULTS – CDMA MODE**

Frequency (MHz)	Channel	Modulation	Conducted Power (dBm)	Battery Type	Separation Distance (cm)	Antenna Position	SAR (w/kg)
824.04	1013	CDMA	23.7	Standard	1.0	Retracted	0.503
824.04	1013	CDMA	23.7	Standard	1.0	Extended	0.488
836.49	363	CDMA	23.7	Standard	1.0	Retracted	0.434
836.49	363	CDMA	23.7	Standard	1.0	Extended	0.420
848.97	777	CDMA	23.6	Standard	1.0	Retracted	0.501
848.97	777	CDMA	23.6	Standard	1.0	Extended	0.406
824.04	1013	CDMA	23.7	Extended	1.0	Retracted	0.482
824.04	1013	CDMA	23.7	Extended	1.0	Extended	0.475
<b>Mixture Type: Muscle</b> <b>Dielectric Constant: 56.1</b> <b>Conductivity: 0.95</b>		<b>ANSI / IEEE C95.1 1992 - SAFETY LIMIT</b> <b>Spatial Peak Uncontrolled Exposure/General Population</b> <b>BODY: 1.6 W/kg (averaged over 1 gram)</b>					

Notes:

1. The SAR values found are below the maximum limit of 1.6 w/kg.
2. The worst-case body SAR value found for CDMA mode was 0.503 w/kg.
3. The EUT was tested for body SAR using the supplied Wide Telecom body holster, which provided a separation distance of 1.0cm between the back of the phone and the outer surface of the planar phantom.



Body SAR Test Setup



## 5.0 SAR SAFETY LIMITS

<b>EXPOSURE LIMITS</b> (General populations/Uncontrolled Exposure Environment)	<b>SAR</b> (W/Kg)
Spatial Average (averaged over the whole body)	0.08
Spatial Peak (averaged over any 1g of tissue)	1.60
Spatial Peak (hands/wrists/feet/ankles averaged over 10g)	4.00

- Notes: 1. The FCC SAR safety limits specified in the table above apply to devices operated in the General Population / Uncontrolled Exposure environment.
2. Uncontrolled environments are defined as locations where there is exposure of individuals who have no knowledge or control of their exposure.

## 6.0 DETAILS OF SAR EVALUATION

The WIDE TELECOM INC. Model: WSH-100 Dual-Mode AMPS/CDMA Cellular Phone FCC ID: NPWWSH-100 was found to be compliant for localized Specific Absorption Rate (SAR) based on the following test provisions and conditions:

- 1) The handset was placed in a normal operating position with the center of the ear-piece aligned with the ear canal on the phantom.
- 2) With the ear-piece touching the phantom the center line of the handset was aligned with an imaginary plane (X and Y axis) consisting of three lines connecting both ears and the mouth.
- 3) The handset was gradually moved towards the cheek until any point of the mouth-piece or keypad touched the cheek.
- 4) The EUT was tested in a body-worn configuration with the phone placed in the Wide Telecom body holster. The back of the phone was placed in the holder facing parallel to the outer surface of the planar phantom, and the body holster provided a 1.0cm spacing between the back of the phone/antenna and the outer surface of the planar phantom.
- 5) SAR measurements were evaluated at maximum power and the unit was operated for an appropriate period prior to the evaluation in order to minimize drift.
- 6) The device was keyed to operate continuously in the transmit mode for the duration of the test.
- 7) The location of the maximum spatial SAR distribution (Hot Spot) was determined relative to the handset and its antenna.
- 8) The EUT was tested with a fully charged battery.

## 7.0 EVALUATION PROCEDURES

The Specific Absorption Rate (SAR) evaluation was performed in the following manner:

a. (i) The evaluation was performed in an applicable area of the phantom depending on the type of device being tested. For devices worn about the ear during normal operation, both the left and right ear positions were evaluated at the center frequency of the band at maximum power. The side, which produced the greatest SAR, determined which side of the phantom would be used for the entire evaluation. The positioning of the ear-held device relative to the phantom was dictated by FCC OET Bulletin 65 Supp., C.

(ii) For face-held and body-worn devices, or devices which can be operated within 20cm of the body, the planar section of the phantom was used. The type of device being evaluated dictated the distance of the EUT to the outer surface of the planar phantom.

b. The SAR was determined by a pre-defined procedure within the DASY3 software. Upon completion of a reference and optical surface check, the exposed region of the phantom was scanned near the inner surface with a grid spacing of 20mm x 20mm.

c. A 5x5x7 matrix was performed around the greatest spatial SAR distribution found during the area scan of the applicable exposed region. SAR values were then calculated using a 3-D spline interpolation algorithm and averaged over spatial volumes of 1 and 10 grams.

d. If the EUT had any appreciable drift over the course of the evaluation, then the EUT was re-evaluated. Any unusual anomalies over the course of the test also warranted a re-evaluation.

## 8.0 SYSTEM VALIDATION

Prior to the assessment, the system was verified in the planar region of the phantom. For devices operating below 1GHz, an 835MHz dipole or 900MHz was used, depending on the operating frequency of the EUT. For devices operating above 1GHz, an 1800MHz dipole was used. A forward power of 250mW was applied to the dipole and system was verified to a tolerance of  $\pm 5\%$  for 835MHz and 900MHz dipoles, and  $\pm 10\%$  for 1800MHz dipole. The applicable verification(s) is/are as follows (see Appendix B for validation test plot):

Dipole Validation Kit	Target SAR 1g (w/kg)	Measured SAR 1g (w/kg)
D835V2	2.06	2.02

## 9.0 SIMULATED TISSUES

The brain and muscle mixtures consist of a viscous gel using hydroxethylcellulose (HEC) gelling agent and saline solution. Preservation with a bactericide is added and visual inspection is made to ensure air bubbles are not trapped during the mixing process. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the tissue.

INGREDIENT	MIXTURE – 835MHz		
	Brain % (Validation)	Brain %	Muscle %
Water	40.1	41.45	52.4
Sugar	58.1	56.0	45.0
Salt	0.7	1.45	1.4
HEC	1.0	1.0	1.0
Bactericide	0.1	0.1	0.2

## 10.1 TISSUE PARAMETERS

The dielectric parameters of the fluids were verified prior to the SAR evaluation using an 85070C Dielectric Probe Kit and an 8753E Network Analyzer. The dielectric parameters of the fluid are as follows:

Equivalent Tissue (835MHz)	Dielectric Constant $\epsilon_r$	Conductivity $\sigma$ (mho/m)	$\rho$ (Kg/m <sup>3</sup> )
Brain (Validation)	$44.2 \pm 5\%$	$0.80 \pm 5\%$	1000
Brain	$41.5 \pm 5\%$	$0.90 \pm 5\%$	1000
Muscle	$56.1 \pm 5\%$	$0.95 \pm 5\%$	1000

## **11.0 ROBOT SYSTEM SPECIFICATIONS**

### **Specifications**

**POSITIONER:** Stäubli Unimation Corp. Robot Model: RX60L  
**Repeatability:** 0.02 mm  
**No. of axis:** 6

### **Data Acquisition Electronic (DAE) System**

#### **Cell Controller**

**Processor:** Pentium III  
**Clock Speed:** 450 MHz  
**Operating System:** Windows NT  
**Data Card:** DASY3 PC-Board

#### **Data Converter**

**Features:** Signal Amplifier, multiplexer, A/D converter, and control logic  
**Software:** DASY3 software  
**Connecting Lines:** Optical downlink for data and status info.  
Optical uplink for commands and clock

### **PC Interface Card**

**Function:** 24 bit (64 MHz) DSP for real time processing  
Link to DAE3  
16 bit A/D converter for surface detection system  
serial link to robot  
direct emergency stop output for robot

### **E-Field Probe**

**Model:** ET3DV6  
**Serial No.:** 1387  
**Construction:** Triangular core fiber optic detection system  
**Frequency:** 10 MHz to 6 GHz  
**Linearity:**  $\pm 0.2$  dB (30 MHz to 3 GHz)

### **Phantom**

**Phantom:** Generic Twin  
**Shell Material:** Fiberglass  
**Thickness:** 2.0  $\pm$  0.1 mm

## 12.0 TEST EQUIPMENT LIST

SAR MEASUREMENT SYSTEM		
<u>EQUIPMENT</u>	<u>S/N #</u>	<u>CALIB. DATE</u>
<b>DASY3 System</b> -Robot -ET3DV6 E-Field Probe -DAE -835MHz Validation Dipole -900MHz Validation Dipole -1800MHz Validation Dipole -Generic Twin Phantom V3.0	599396-01 1387 383 411 054 247 N/A	N/A Sept 1999 Sept 1999 Aug 1999 Aug 1999 Aug 1999 N/A
<b>85070C Dielectric Probe Kit</b>	N/A	N/A
<b>Gigatronics 8652A Power Meter</b> -Power Sensor 80701A -Power Sensor 80701A	1835272 1833535 1833542	Oct 1999 Oct 1999 Oct 1999
<b>E4408B Spectrum Analyzer</b>	US39240170	Nov 1999
<b>8594E Spectrum Analyzer</b>	3543A02721	Mar 2000
<b>8753E Network Analyzer</b>	US38433013	Nov 1999
<b>8648D Signal Generator</b>	3847A00611	N/A
<b>5S1G4 Amplifier Research Power Amplifier</b>	26235	N/A

### 13.0 MEASUREMENT UNCERTAINTIES

Uncertainty Description	Error	Distribution	Weight	Standard Deviation	Offset
<b>Probe Uncertainty</b>					
Axial isotropy	$\pm 0.2$ dB	U-Shaped	0.5	$\pm 2.4$ %	
Spherical isotropy	$\pm 0.4$ dB	U-Shaped	0.5	$\pm 4.8$ %	
Isotropy from gradient	$\pm 0.5$ dB	U-Shaped	0	$\pm$	
Spatial resolution	$\pm 0.5$ %	Normal	1	$\pm 0.5$ %	
Linearity error	$\pm 0.2$ dB	Rectangle	1	$\pm 2.7$ %	
Calibration error	$\pm 3.3$ %	Normal	1	$\pm 3.3$ %	
<b>SAR Evaluation Uncertainty</b>					
Data acquisition error	$\pm 1$ %	Rectangle	1	$\pm 0.6$ %	
ELF and RF disturbances	$\pm 0.25$ %	Normal	1	$\pm 0.25$ %	
Conductivity assessment	$\pm 5$ %	Rectangle	1	$\pm 5.8$ %	
<b>Spatial Peak SAR Evaluation Uncertainty</b>					
Extrapolated boundary effect	$\pm 3$ %	Normal	1	$\pm 3$ %	$\pm 5$ %
Probe positioning error	$\pm 0.1$ mm	Normal	1	$\pm 1$ %	
Integrated and cube orientation	$\pm 3$ %	Normal	1	$\pm 3$ %	
Cube Shape inaccuracies	$\pm 2$ %	Rectangle	1	$\pm 1.2$ %	
Device positioning	$\pm 6$ %	Normal	1	$\pm 6$ %	
<b>Combined Uncertainties</b>				$\pm 11.7$ %	$\pm 5$ %

Measurement uncertainties in SAR measurements are difficult to quantify due to several variables including biological, physiological, and environmental. However, the estimated measurement uncertainties in SAR are less than 15-25 %.

According to ANSI/IEEE C95.3, the overall uncertainties are difficult to assess and will vary with the type of meter and usage situation. However, accuracy's of  $\pm 1$  to 3 dB can be expected in practice, with greater uncertainties in near-field situations and at higher frequencies (shorter wavelengths), or areas where large reflecting objects are present. Under optimum measurement conditions, SAR measurement uncertainties of at least  $\pm 2$ dB can be expected.

According to CENELEC, typical worst-case uncertainty of field measurements is  $\pm 5$  dB. For well-defined modulation characteristics the uncertainty can be reduced to  $\pm 3$  dB.

## **14.0 REFERENCES**

- (1) ANSI, *ANSI/IEEE C95.1: 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 Radio frequency Electromagnetic Fields”, OET Bulletin 65, FCC, Washington, D.C. 20554, 1997;
- (3) Thomas Schmid, Oliver Egger, and Neils Kuster, “Automated E-field scanning system for dosimetric assessments”, *IEEE Transaction on Microwave Theory and Techniques*, Vol. 44, pp. 105 – 113, January, 1996.
- (4) Niels Kuster, Ralph Kastle, and Thomas Schmid, “Dosimetric evaluation of mobile communications equipment with know precision”, *IEICE Transactions of Communications*, vol. E80-B, no. 5, pp. 645 – 652, May 1997.



***APPENDIX A - SAR MEASUREMENT DATA***

## Wide Telecom FCC ID: NPWWSH-100

Generic Twin Phantom; Left Hand Section; Position: (75°,65°);  
Probe: ET3DV6 - SN1387; ConvF(6.43,6.43,6.43); Crest factor: 1.0;

835MHz Brain:  $\sigma = 0.90$  mho/m  $\epsilon_r = 41.5$   $\rho = 1.00$  g/cm<sup>3</sup>

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

Cube 5x5x7

SAR (1g): 1.36 mW/g, SAR (10g): 0.932 mW/g

Wide Telecom Dual-Mode Single Band

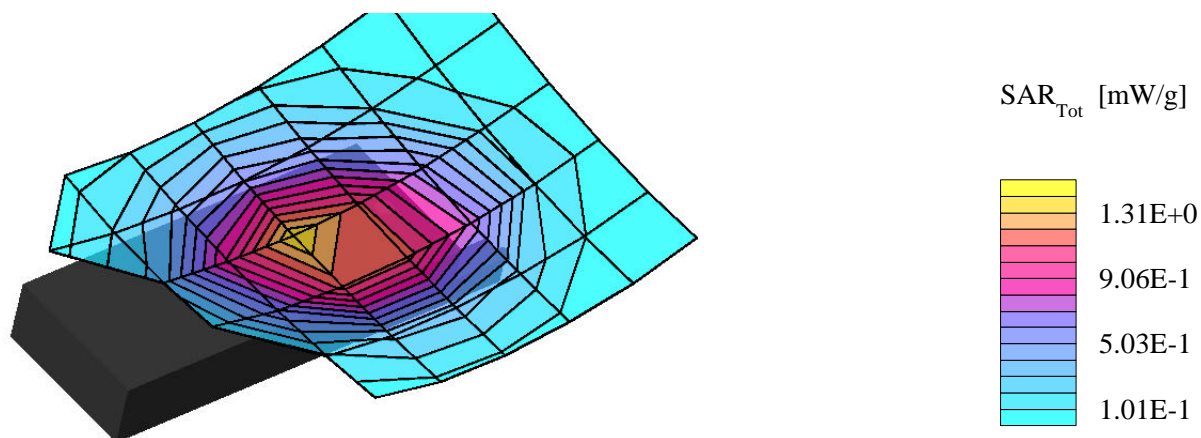
Model: WSH-100

Unmodulated Carrier - Antenna In

Channel 991 [824.04MHz]

Conducted Power 24.0dBm

Test Date: Nov 20, 2000



## Wide Telecom FCC ID: NPWWSH-100

Generic Twin Phantom; Left Hand Section; Position: (75°,65°);  
Probe: ET3DV6 - SN1387; ConvF(6.43,6.43,6.43); Crest factor: 1.0;

835MHz Brain:  $\sigma = 0.90$  mho/m  $\epsilon_r = 41.5$   $\rho = 1.00$  g/cm<sup>3</sup>

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

Cube 5x5x7

SAR (1g): 1.42 mW/g, SAR (10g): 0.966 mW/g

Wide Telecom Dual-Mode Single Band

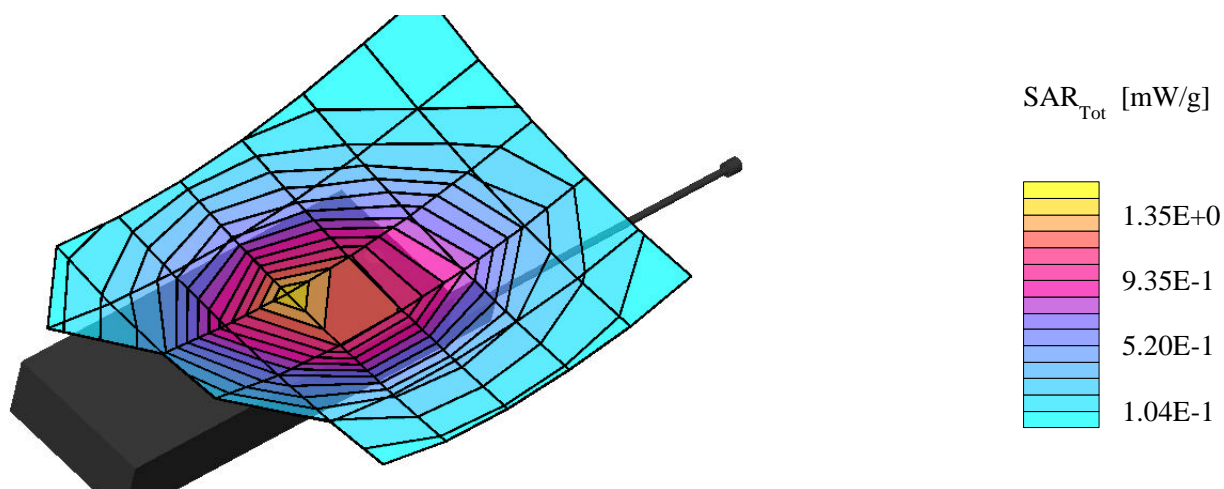
Model: WSH-100

Unmodulated Carrier - Antenna Out

Channel 991 [824.04MHz]

Conducted Power 24.0dBm

Test Date: Nov 20, 2000



## Wide Telecom FCC ID: NPWWSH-100

Generic Twin Phantom; Left Hand Section; Position: (75°,65°);  
Probe: ET3DV6 - SN1387; ConvF(6.43,6.43,6.43); Crest factor: 1.0;  
835MHz Brain:  $\sigma = 0.90$  mho/m  $\epsilon_r = 41.5$   $\rho = 1.00$  g/cm<sup>3</sup>  
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0  
Cube 5x5x7  
SAR (1g): 1.38 mW/g, SAR (10g): 0.955 mW/g

Wide Telecom Dual-Mode Single Band

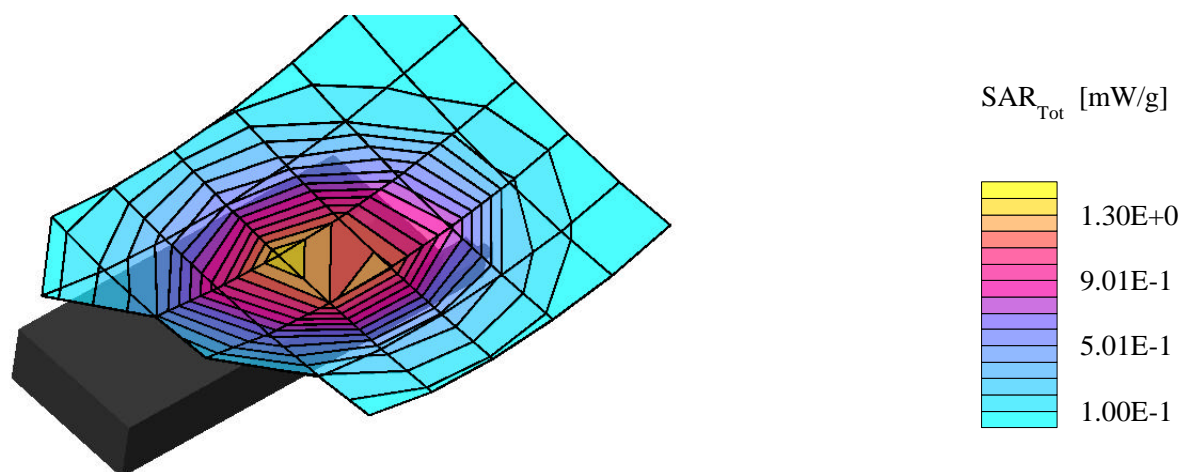
Model: WSH-100

Unmodulated Carrier - Antenna In

Channel 383 [836.49MHz]

Conducted Power 24.0dBm

Test Date: Nov 20, 2000



## Wide Telecom FCC ID: NPWWSH-100

Generic Twin Phantom; Left Hand Section; Position: (75°,65°);  
Probe: ET3DV6 - SN1387; ConvF(6.43,6.43,6.43); Crest factor: 1.0;  
835MHz Brain:  $\sigma = 0.90$  mho/m  $\epsilon_r = 41.5$   $\rho = 1.00$  g/cm<sup>3</sup>  
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0  
Cube 5x5x7  
SAR (1g): 1.41 mW/g, SAR (10g): 0.963 mW/g

Wide Telecom Dual-Mode Single Band

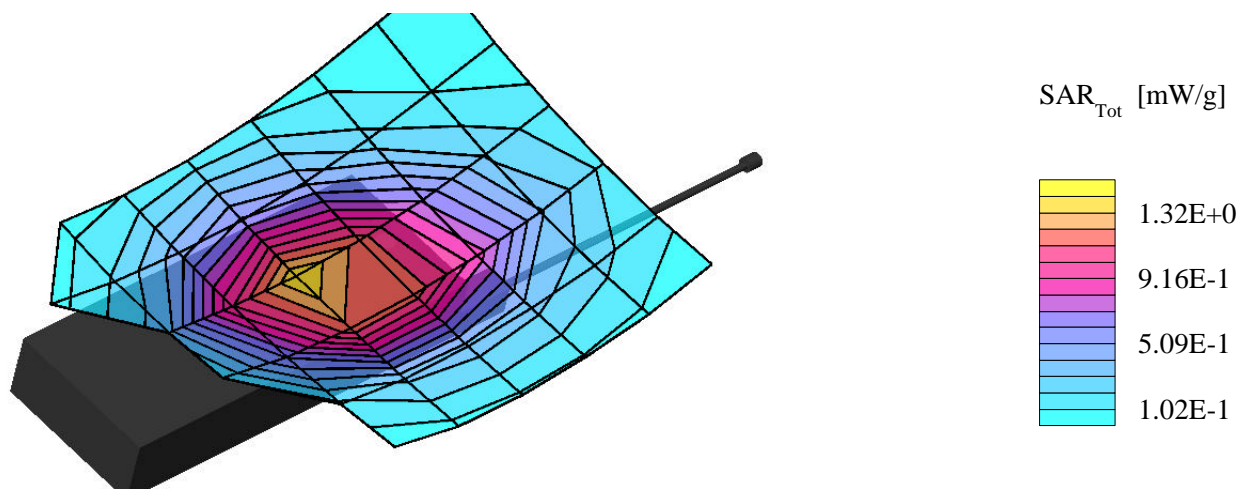
Model: WSH-100

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835MHz Brain:  $\sigma = 0.90$  mho/m  $\epsilon_r = 41.5$   $\rho = 1.00$  g/cm<sup>3</sup>

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

Cube 5x5x7

SAR (1g): 1.49 mW/g, SAR (10g): 1.01 mW/g

Wide Telecom Dual-Mode Single Band

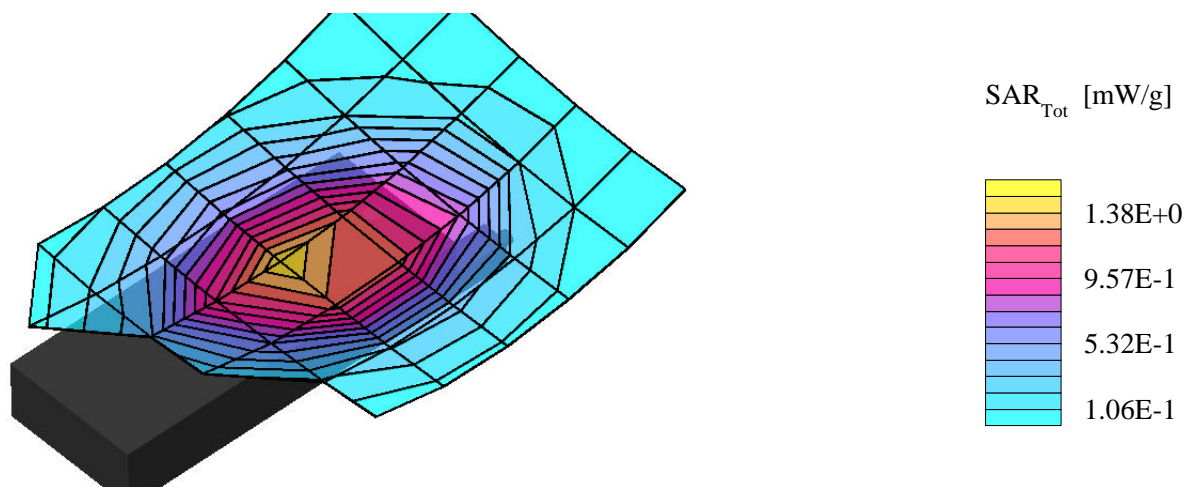
Model: WSH-100

Unmodulated Carrier - Antenna In

Channel 799 [848.97MHz]

Conducted Power 23.7dBm

Test Date: Nov 20, 2000



## Wide Telecom FCC ID: NPWWSH-100

Generic Twin Phantom; Left Hand Section; Position: (75°,65°);  
Probe: ET3DV6 - SN1387; ConvF(6.43,6.43,6.43); Crest factor: 1.0;

835MHz Brain:  $\sigma = 0.90$  mho/m  $\epsilon_r = 41.5$   $\rho = 1.00$  g/cm<sup>3</sup>

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

Cube 5x5x7

SAR (1g): 1.31 mW/g, SAR (10g): 0.885 mW/g

Wide Telecom Dual-Mode Single Band

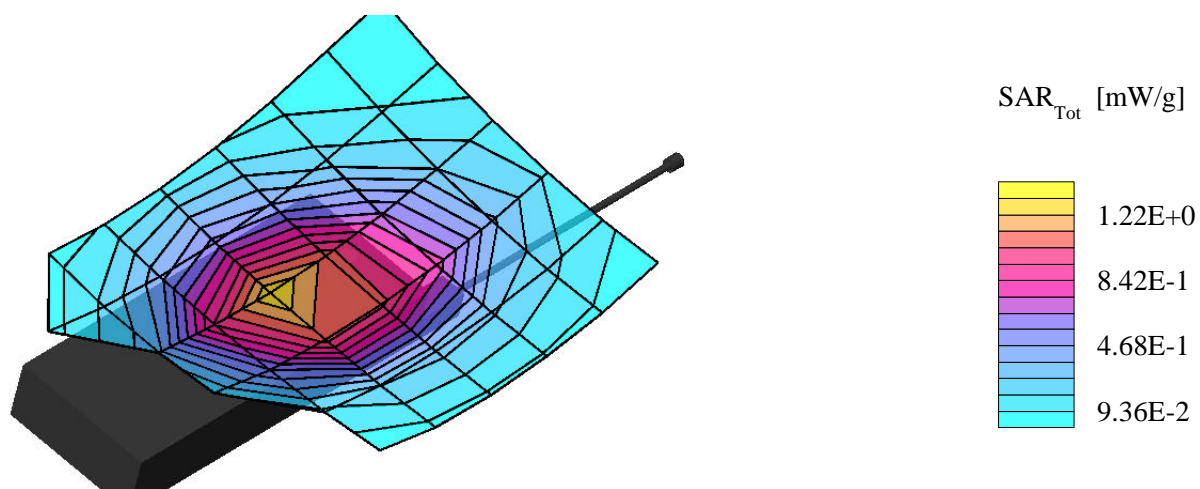
Model: WSH-100

Unmodulated Carrier - Antenna Out

Channel 799 [848.97MHz]

Conducted Power 23.7dBm

Test Date: Nov 20, 2000

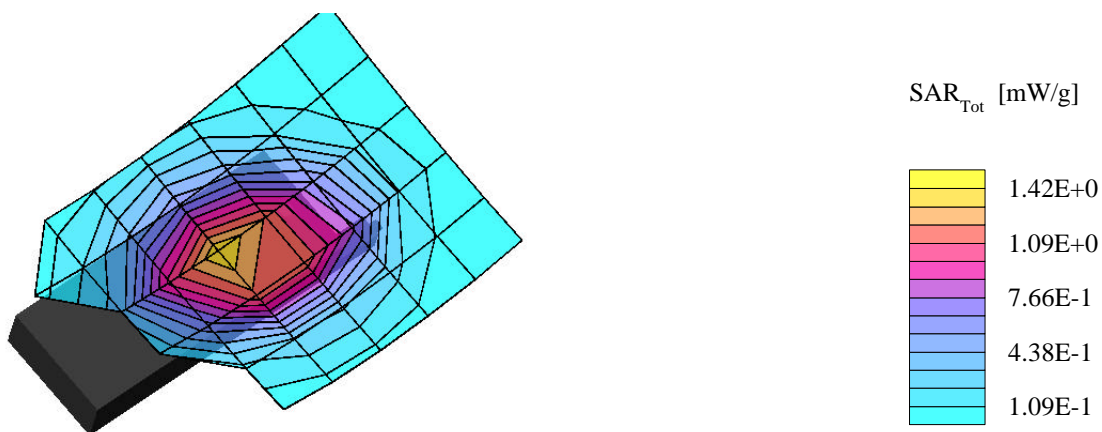




## Wide Telecom FCC ID: NPWWSH-100

Generic Twin Phantom; Left Hand Section; Position: (75°,65°)  
Probe: ET3DV6 - SN1387; ConvF(6.43,6.43,6.43); Crest factor: 1.0  
835MHz Brain:  $\sigma = 0.90$  mho/m  $\epsilon_r = 41.5$   $\rho = 1.00$  g/cm<sup>3</sup>  
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0  
Cube 5x5x7  
SAR (1g): 1.43 mW/g, SAR (10g): 0.964 mW/g

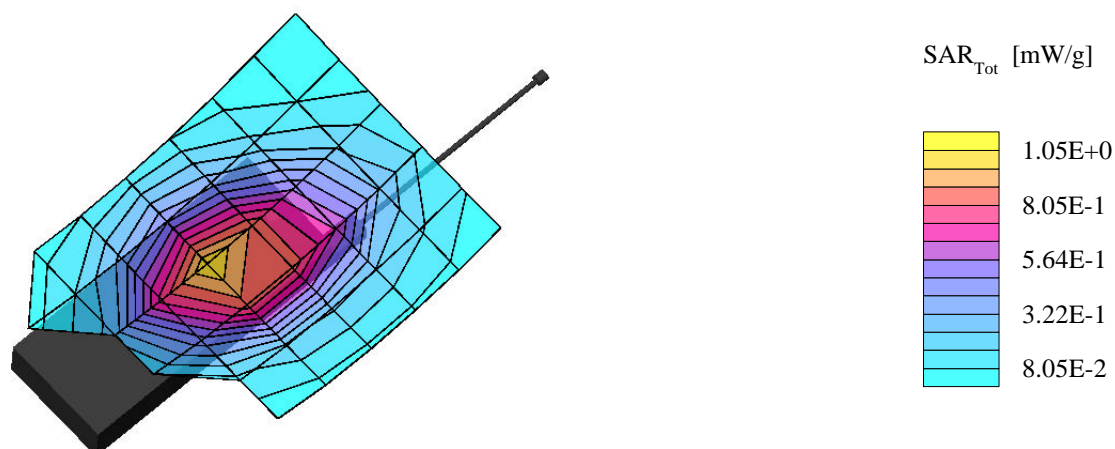
Extended Battery  
Wide Telecom Dual-Mode Single Band  
Model: WSH-100  
Unmodulated Carrier - Antenna In  
Channel 799 [848.97MHz]  
Conducted Power 23.7dBm  
Test Date: Nov 20, 2000



## Wide Telecom FCC ID: NPWWSH-100

Generic Twin Phantom; Left Hand Section; Position: (75°,65°)  
Probe: ET3DV6 - SN1387; ConvF(6.43,6.43,6.43); Crest factor: 1.0  
835MHz Brain:  $\sigma = 0.90$  mho/m  $\epsilon_r = 41.5$   $\rho = 1.00$  g/cm<sup>3</sup>  
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0  
Cube 5x5x7  
SAR (1g): 1.21 mW/g, SAR (10g): 0.816 mW/g

Extended Battery  
Wide Telecom Dual-Mode Single Band  
Model: WSH-100  
Unmodulated Carrier - Antenna Out  
Channel 799 [848.97MHz]  
Conducted Power 23.7dBm  
Test Date: Nov 20, 2000



## Wide Telecom FCC ID: NPWWSH-100

Generic Twin Phantom; Right Hand Section; Position: (75°,65°);  
Probe: ET3DV6 - SN1387; ConvF(6.43,6.43,6.43); Crest factor: 1.0;

835MHz Brain:  $\sigma = 0.90$  mho/m  $\epsilon_r = 41.5$   $\rho = 1.00$  g/cm<sup>3</sup>

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

Cube 5x5x7

SAR (1g): 1.15 mW/g, SAR (10g): 0.803 mW/g

Wide Telecom Dual-Mode Single Band

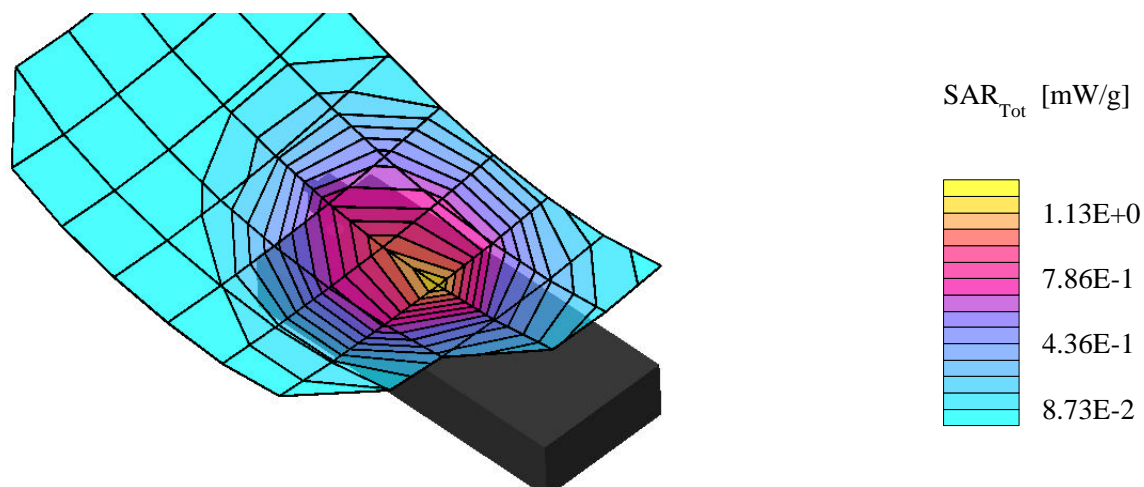
Model: WSH-100

Unmodulated Carrier - Antenna In

Channel 383 [836.49MHz]

Conducted Power 24.0dBm

Test Date: Nov 20, 2000



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Generic Twin Phantom; Right Hand Section; Position: (75°,65°);  
Probe: ET3DV6 - SN1387; ConvF(6.43,6.43,6.43); Crest factor: 1.0;

835MHz Brain:  $\sigma = 0.90$  mho/m  $\epsilon_r = 41.5$   $\rho = 1.00$  g/cm<sup>3</sup>

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

Cube 5x5x7

SAR (1g): 1.01 mW/g, SAR (10g): 0.706 mW/g

Wide Telecom Dual-Mode Single Band

Model: WSH-100

Unmodulated Carrier - Antenna Out

Channel 383 [836.49MHz]

Conducted Power 24.0dBm

Test Date: Nov 20, 2000

