ENGINEERING TEST REPORT

Elite 780 MOBITEX
Model No.: Elite 780 MOBITEX

Tested For

IVI CHECKMATE Inc.
79 Torbarrie Road
Toronto, Ontario
Canada, M3L 1G5

In Accordance With

SAR (Specific Absorption Rate) Requirements
using guidelines established in IEEE C95.1-1991,
FCC OET Bulletin 65 (Supplement C),
Industry Canada RSS-102 (ssue 1) and
ACA Radiocommunications (Electromagnetic Radiation – Human Exposure)
Amendment Standard 2000 (No. 1)

UltraTech's File No.: IVI-077-SAR

This Test report is Issued under the Authority of Tri M. Luu, Professional Engineer, Vice President of Engineering UltraTech Group of Labs Date: December 1, 2000	
Report Prepared by: Carolyn Luu Issued Date: December 1, 2000	Tested by: JaeWook Choi Test Dates: November 9, 2000

The results in this Test Report apply only to the sample(s) tested, which has been randomly selected.

UltraTech

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EXHIBIT 1. INTRODUCTION

1.1. SCOPE

Reference:	SAR (Specific Absorption Rate) Requirements IEEE C95.1-1991, FCC OET Bulletin 65 (Supplement C) Industry Canada RSS-102 (Issue 1). ACA Radiocommunications (Electromagnetic Radiation – Human Exposure) Amendment Standard 2000 (No. 1)
Title	Safety Levels with respect to human exposure to Radio Frequency Electromagnetic Fields Guideline for Evaluating the Environmental Effects of Radio Frequency Radiation
Purpose of Test:	To show compliance with Federal regulated SAR requirements in Canada and the US.
Method of Measurements:	IEEE C95.1-1991, FCC OET Bulletin 65 (Supplement C) and Industry Canada RSS-102(Issue 1)
Exposure Category	**[X] General population, uncontrolled exposure** [ ] Occupational, controlled exposure

1.2. REFERENCES

The methods and procedures used for the measurements contained in this report are details in the following reference standards:

Publications	**Year**	**Title**
Industry Canada RSS102	1999	"Evaluation Procedure for Mobile and Portable Radio Transmitters with respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields"
ACA	2000	ACA Radiocommunications (Electromagnetic Radiation – Human Exposure) Amendment Standard 2000 (No. 1)
NCRP Report No.86	1986	"Biological Effects and Exposure Criteria for radio Frequency Electromagnetic Fields"
FCC OET Bulletin 65	1997	"Evaluating Compliance with FCC Guidelines for Human Exposure to radio Frequency Fields"
ANSI/IEEE C95.3	1992	"Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave"
ANSI/IEEE C95.1	1992	"Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300GHz"
AS/NZS 2722.1	1998	Interim Australian/New Zealand Standard. "Radiofrequency fields, Part 1:Maximum exposure levels – 3kHz to 300GHz "

EXHIBIT 2. PERFORMANCE ASSESSMENT

2.1. CLIENT AND MANUFACTURER INFORMATION

APPLICANT:	
Name:	IVI CHECKMATE Inc.
Address:	79 Torbarrie Road Toronto, Ontario Canada, M3L 1G5
Contact Person:	Mr. Ayman Sydhom Phone #: 416-245-6700 Fax #: 416-245-6701 Email Address: asydhom@ivicm.com

MANUFACTURER:	
Name:	IVI CHECKMATE Inc.
Address:	79 Torbarrie Road TorontoOntario Canada, M3L 1G5
Contact Person:	Mr. Ayman Sydhom Phone #: 416-245-6700 Fax #: 416-245-6701 Email Address: asydhom@ivicm.com

2.2. DEVICE UNDER TEST (DUT) DESCRIPTION

The following information are supplied by the applicant.

Trade Name	Elite 780 MOBITEX
Type/Model Number	Elite 780 MOBITEX
Serial Number	04069942-85904279
Type of Equipment	Point of Sales Radio
Frequency of Operation	896-901 MHz
Rated RF Power	1.6 W_{peak}
Modulation Employed	Frequency Moduation
Antenna Type	Monopole
External Power Supply	Ni-Cd battery (7.2V-940mAh)
Primary User Functions of DUT:	Voice Radio Communication Through Air

2.3. SPECIAL CHANGES ON THE DUT'S HARDWARE/SOFTWARE FOR TESTING PURPOSES

None

2.4. ANCILLARY EQUIPMENT

None

2.5. GENERAL TEST CONFIGURATIONS

2.5.1. Equipment Configuration

Power and signal distribution, grounding, interconnecting cabling and physical placement of equipment of a test system shall simulate the typical application and usage in so far as is practicable, and shall be in accordance with the relevant product specifications of the manufacturer.

The configuration that tends to maximize the DUT's emission or minimize its immunity is not usually intuitively obvious and in most instances selection will involve some trial and error testing. For example, interface cables may be moved or equipment re-orientated during initial stages of testing and the effects on the results observed.

Only configurations within the range of positions likely to occur in normal use need to be considered.

The configuration selected shall be fully detailed and documented in the test report, together with the justification for selecting that particular configuration.

2.5.2. Exercising Equipment

The exercising equipment and other auxiliary equipment shall be sufficiently decoupled from the EUT so that the performance of such equipment does not significantly influence the test results.

2.6. SPECIFIC OPERATING CONDITIONS

Not specified.

2.7. BLOCK DIAGRAM OF TEST SETUP

The EUT was configured as normal intended use. The following block diagram shows the equipment arrangement during tests:

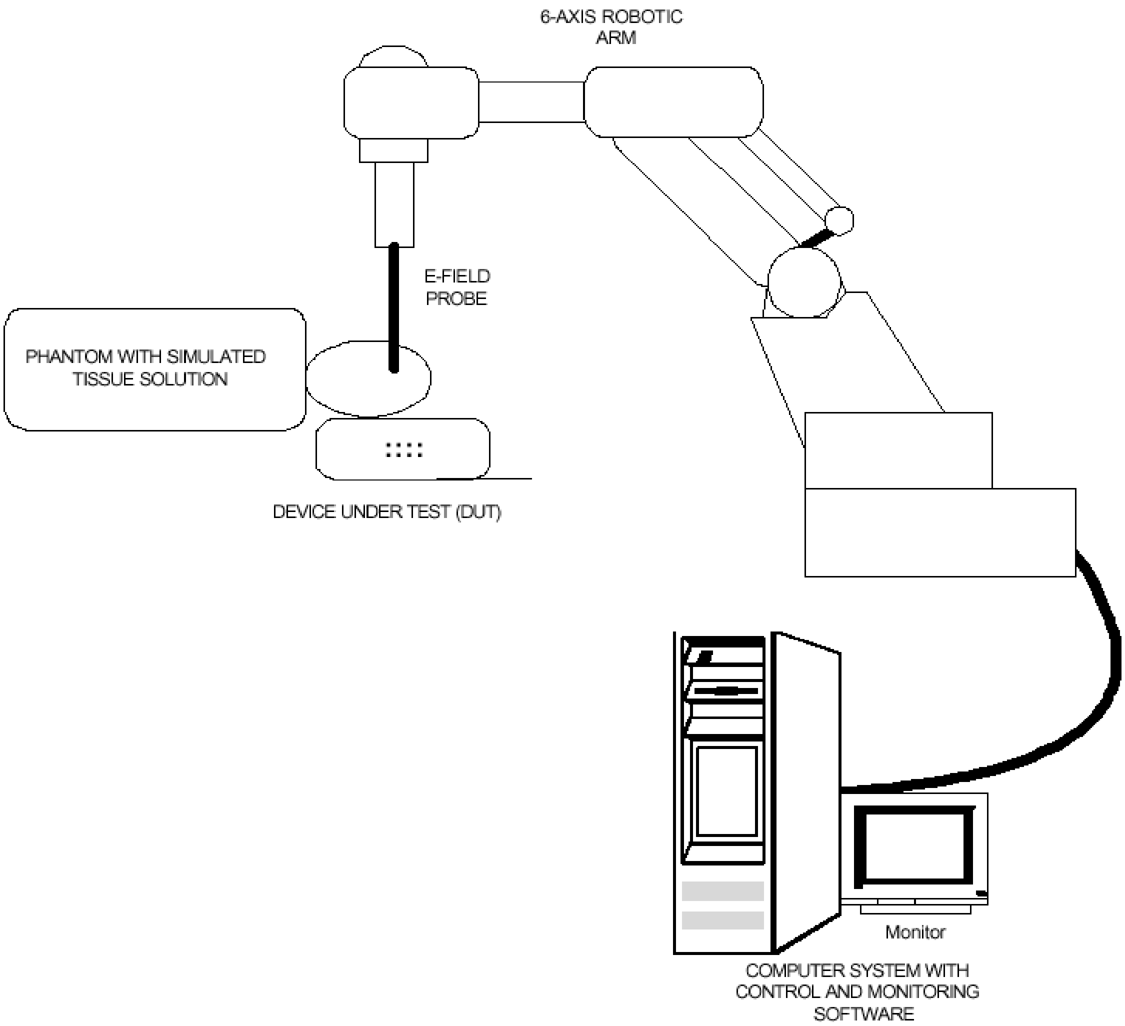


EXHIBIT 3. SUMMARY OF TEST RESULTS

3.1. LOCATION OF TESTS

All of the measurements described in this report were performed at UltraTech Group of Labs located in:

3000 Bristol Circle, Oakville, Ontario, Canada.

3.2. APPLICABILITY & SUMMARY OF SAR RESULTS

The Specific Absorption Rate(SAR), determined at 896 MHz of the EUT, is 7.183 W/Kg when operating with a 100 % duty factor. The EUT as tested, and as it will be marketed, with a duty factor of less than 10.8 %, is found to be compliant with the FCC requirement, which is 1.6 W/Kg for the general population/uncontrolled category.

SAR Limits	Test Requirements	Compliance (Yes/No)
General population/Uncontrolled exposure 0.08W/kg whole body average and spatial peak SAR of 1.6W/kg, averaged over 1gram of tissue Hands, wrist, feet and ankles have a peak SAR not to exceed 4 W/kg, averaged over 10 grams of tissue.	Requirements using guidelines established in IEEE C95.1-1991 FCC OET Bulletin 65 (Supplement C) Industry Canada RSS-102 (Issue 1). ACA Radiocommunications (Electromagnetic Radiation – Human Exposure) Amendment Standard 2000 (No. 1)	Yes
Occupational/Controlled Exposure 0.4W/kg whole body average and spatial peak SAR of 8W/kg, averaged over 1gram of tissue Hands, wrist, feet and ankles have a peak SAR not to exceed 20 W/kg, averaged over 10 grams of tissue.	Requirements using guidelines established in IEEE C95.1-1991 FCC OET Bulletin 65 (Supplement C), Industry Canada RSS-102 (Issue 1) ACA Radiocommunications (Electromagnetic Radiation – Human Exposure) Amendment Standard 2000 (No. 1)	N/A

EXHIBIT 4. MEASUREMENTS, EXAMINATIONS & TEST DATA

4.1. TEST SETUP

EUT Information		**Condition**	
Radio Type	Point of sales radio	Robot Type	6 Axis
Model Number	Elite 780 MOBITEX	Scan Type	SAR
Serial Number	04069942-85904279	Measured Field	E
Frequency Band (MHz)	896 - 901 MHz	Phantom Type	Open Back Full Body
Frequency Tested (MHz)	896, 901	Phantom Position	Waist
Nominal Output Power (W)	1.6 $_{peak}$	Room Temperature	24 ± 1 °C
Antenna Type	Monopole		
Signal Type	CW		
Duty Cycle	100% *		

Type of Tissue	Muscle	
Target Frequency (MHz)	896	
Target Dielectric Constant	55.9	
Target Conductivity (S/m)	0.97	
Composition (by weight)	Tap Water (53.42 %) Sugar (45.20 %) Salt (0.80%) HEC (0.53 %) Bactericide (0.05%)	
Measured Dielectric Constant	56.1	
Measured Conductivity (S/m)	0.99	
Probe Name	E	
Probe Orientation	Isotropic	
Probe Offset (mm)	3.0	
Sensor Factor	10.8	
Conversion Factor	0.768	
Calibration Date (MM/DD/YY)	03/24/99	

* **Duty Cycle Factor** – The manufacturer has provided samples of the radio device configured for the worst case duty cycle measurements. Measurement from these samples obtained a worst case duty cycle of 10.8 %. Measurement data is provided in **Annex C**

4.2. PHOTOGRAPH OF EUT

< Front View >

< Rear View >

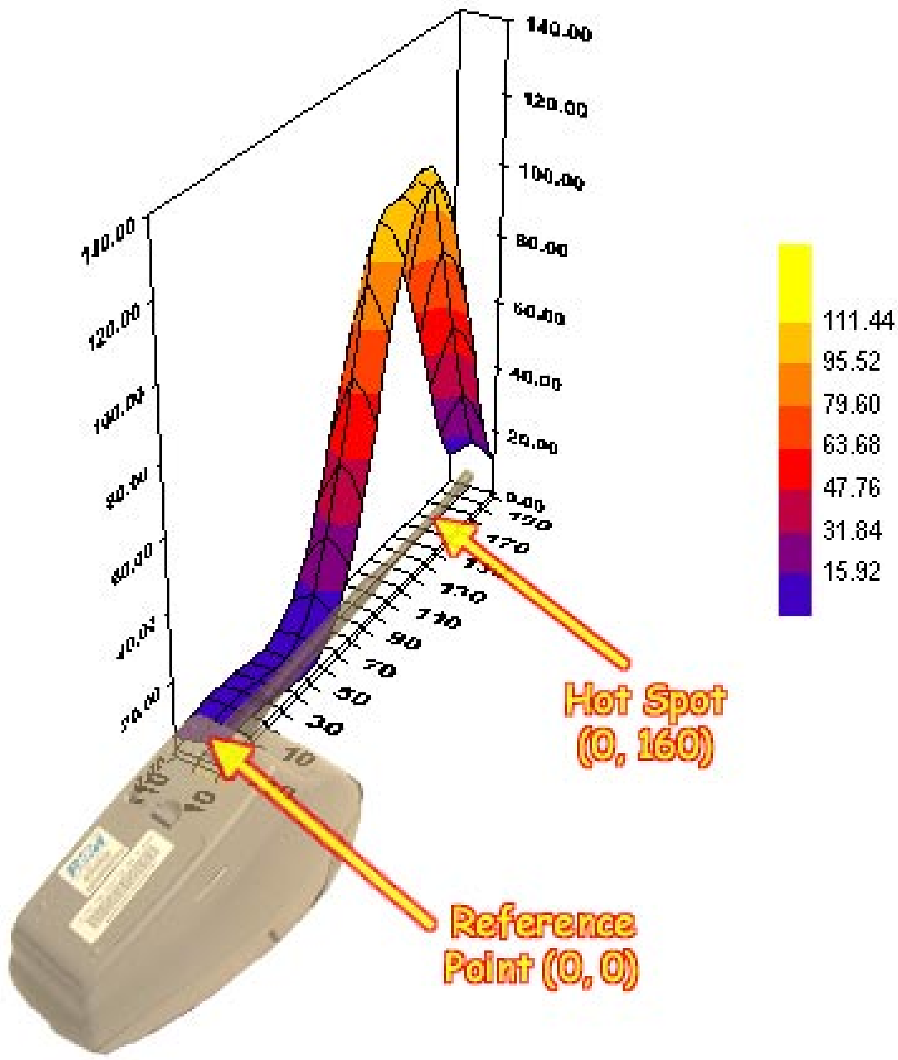
4.3. PHOTOGRAPHS OF EUT POSITION

*** The worst case test configuration was determined with different orientation of the EUT (Antenna parallel to the phantom and the tip of the antenna in contact with the phantom). **The EUT positioned the antenna in contact with the phantom yield higher SAR reading**.***

< Overview - Waist with the tip of the antenna in contact with the phantom >

< Close-up view - Waist with the tip of the antenna in contact with the phantom >

4.4. MAXIMUM FIELD LOCATION (REFER TO P. 13)



4.5. PEAK SPATIAL-AVERAGE SAR MEASURED

Maximum Field at (0,160)				
DUT Positioning	Frequency (MHz)	Measured Power (W)	SAR (W/Kg)	DUT Configuration
Waist	896	1.63 peak	0.776 (7.183)	The tip of the antenna in contact with the phantom

4.6. SAR MEASUREMENT DATA

DUT Positioning	Frequency (MHz)	Measured Power (W)	SAR (W/Kg)	DUT Configuration
Waist	896	1.63 peak	0.776 (7.183)	The tip of the antenna in contact with the phantom
	901	1.54 peak	0.757 (7.009)	

* The 10.8 % duty factor, the source-based time averaging, is applied to evaluate the SAR and the value inside the parenthesis indicates the SAR with 100 % duty factor.
** The worst case test configuration was determined with different orientation of the EUT (Antenna parallel to the phantom and the tip of the antenna in contact with the phantom). **The EUT positioned the tip of the antenna in contact with the phantom yield higher SAR reading**.

EXHIBIT 5. SAR SYSTEM CONFIGURATION & TEST METHODOLOGY

5.1. MEASUREMENT SYSTEM SPECIFICATIONS

Positioning Equipment	Probe
Type : 3D Near Field Scanner Location Repeatability : 0.1mm Speed 180 °/sec AC motors	Sensor : E-Field Spatial Resolution : 0.1 cm^3 Isotropic Response : ± 0.25 dB Dynamic Range : 2 µW/g to 100 mW/g
Computer	**Phantom**
Type : 166 MHz Pentium Memory : 32 Meg. RAM Operating System : Windows NT Monitor : 17" SVGA	Tissue : Simulated Tissue with electrical characteristics similar to those of the human at normal body temperature. Shell : Fiberglass human shell shaped (1.5 mm thick)

5.2. TEST PROCEDURES

In the SAR measurement, the positioning of the probes must be performed with sufficient accuracy to obtain repeatable measurements in the presence of rapid spatial attenuation phenomena. The accurate positioning of the E-field probe is accomplished by using a high precision robot. The robot can be taught to position the probe sensor following a specific pattern of points. In a first sweep, the sensor is positioned as close as possible to the interface, with the sensor enclosure touching the inside of the fiberglass shell. The SAR is measured on a grid of points, which covers the curved surface of the phantom in an area larger than the size of the DUT. After the initial scan, a high- resolution grid is used to locate the absolute maximum measured energy point. At this location, attenuation versus depth scan will be accomplished by the measurement system to calculate the SAR value.

5.3. PHANTOM

The phantom used in the evaluation of the RF exposure of the user of the wireless device is a clear fiberglass enclosure 1.5 mm thick, shaped like a human head or body and filled with a mixture simulating the dielectric characteristics of the brain, muscle or other types of human tissue. The maximum width of the cranial model is 17 cm, the cephalic index is 0.7 and the crown circumference of the cranial model is 61 cm. The ear is 6 mm above the outer surface of the shell.

5.4. SIMULATED TISSUE

Simulated Tissue: Suggested in a paper by George Hartsgrove and colleagues in University of Ottawa Ref.: Bioelectromagnetics 8:29-36 (1987)

Ingredient	Quantity
Water	40.4 %
Sugar	56.0 %
Salt	2.5 %
HEC	1.0 %
Bactericide	0.1 %

Table. Example of composition of simulated tissue.

This simulated tissue is mainly composed of water, sugar and salt. At higher frequencies, in order to achieve the proper conductivity, the solution does not contain salt. Also, at these frequencies, D.I. water and alcohol is preferred.

Tissue Density : Approximately 1.25 g/cm^3

5.4.1. Preparation

We determine the volume needs and carefully measure all components. A clean container is used were the ingredients will be mixed. A stirring paddle and a hand drill is used to stir the mixture. First we heat the DI water to about 40 ^oC to help the ingredients to dissolve and then we pour the salt and the bactericide. We stir until all the ingredients are completely dissolved. We continue stirring slowly while adding the sugar. We avoid high RPM from the mixing device to prevent air bubbles in the mixture. Later on, we add the HEC to maintain the solution homogeneous. Mixing time is approximately 30 to 40 min.

5.5. MEASUREMENT OF ELECTRICAL CHARACTERISTICS OF SIMULATED TISSUE

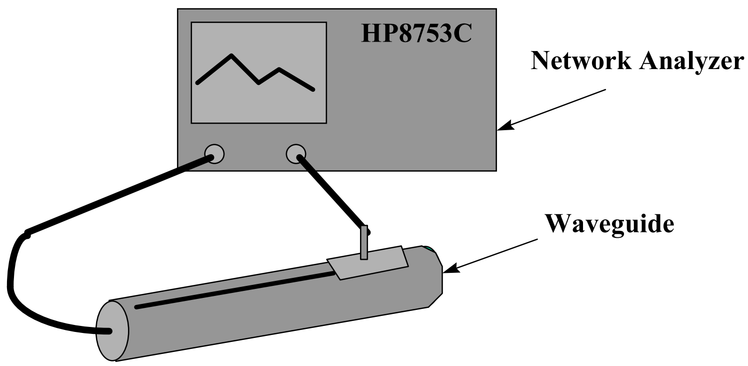
1) Network Analyzer HP8753C or others
2) Slotted Coaxial Waveguide

5.5.1. Description of the slotted coaxial waveguide

The cylindrical waveguide is constructed with copper tube of about 30 to 40 cm of length, generally 12.5 mm diameter, with connectors at both ends. Inside of this tube, a conductive rod about 6.3 mm is coaxial supported by the two ends connectors (radiator). A slot 3 mm wide start at the beginning of the tube to almost the two third of the tube length. The outer edge of the slotted tube is marked in centimeters (10 to 12) every 1 centimeter, 0.5 if higher frequencies. A saddle piece containing the sampling probe is inserted in the slot so the tip of the probe is close but not in contact with the inner conductor (radiator).

To measure the electrical characteristics of the liquid simulated tissue, we fill the coaxial waveguide, select CW frequency and measure amplitude and phase with the Network Analyzer for every point in the slot (typically 11). An effort is made to keep the results dielectric constant and conductivity within 5 % of published data.

Electrical Characteristics Measurement Setup



$$c = 3 \cdot 10^{8} \ m/s$$

$$A = \frac{\Delta A}{20} \ln_{10} \frac{1}{m}$$

$$\theta = \frac{\Delta\theta \cdot 2\pi}{360}$$

$$\lambda = \frac{c}{f} \cdot \frac{100}{2.54} \text{inches}$$

$$\varepsilon_{re} = \frac{(A^2 + \theta^2) \cdot \lambda^2}{4\pi^2}$$

$$\theta' = \left| \frac{|A| \cdot \lambda}{4\pi\sqrt{\varepsilon_{re}}} \right|$$

$$S = \tan(2\theta')$$

$$\varepsilon_r = \frac{\varepsilon_{re}}{\sqrt{(1+S^2)}}$$

$$\sigma = S \cdot 2\pi \cdot f \cdot 8.854 \cdot 10^{12} \cdot \varepsilon_r \ (S/m)$$

where;

ΔA is the amplitude attenuation in dB

Δθ is the phase change in degrees for 5 cm of wave propagation in the slotted line

f is the frequency of interest in Hz

5.6. SYSTEM DESCRIPTION

The measurement system consists of an E-field probe, instrumentation amplifiers, RF transparent cable connecting the amplifiers to the computer, the robotics arm with its extension and proximity sensors, a phantom with simulated tissue and a radio holder to support the device under test. The E-field probe is a three channel device used to measure RF electric fields in the near vicinity of the source. The three sensors are mutually orthogonal positioned dipoles, and are constructed over a quartz substrate. Located in the center of the dipole is a Schottky diode. High impedance lines are connecting the sensor to the amplifier and then optically linked to the computer. The probe has an isotropic response and is transparent to the RF fields.

Calibration is performed by two steps:

1) Determination of free space E-field from amplified probe outputs in a test RF field. This calibration is performed in a TEM cell when the frequency is below 1 GHz and in a waveguide or some other methodologies above 1 GHz. For the free space calibration, we place the probe in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees until the three channels show the maximum reading. This reading equate to 1mW/cm^2 if that power density is available in the correspondent cavity.

2) Correlation of the measured free space E-field, to temperature rise in a dielectric medium. E-field temperature correlation calibration is performed in a planar phantom filled with the appropriate simulated tissue.

For temperature correlation calibration, a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe. First, the location of the maximum E-field close to the phantom's inner surface is determined as a function of power into the RF source; in this case, a dipole. Then, the E-field probe is moved sideways so that the temperature probe, while affixed to the E-field probe is placed at the previous location of the E-field probe. Finally, temperature changes for 30 seconds exposure at the same RF power levels used for the E-field measurement are recorded. The following equation relates SAR to initial temperature slope:

$$SAR = C\frac{\Delta T}{\Delta t}$$

where:
Δt = exposure time (30 seconds),
C = heat capacity of tissue (brain or muscle),
ΔT = temperature increase due to RF exposure.

The heat capacity used for brain simulated tissue is 2.7 joules/^{0}C/g and 3.0 joules/^{0}C/g for muscle.

SAR is proportional to □T / □t, the initial rate of tissue heating, before thermal diffusion takes place. Now, it's possible to quantify the electric field in the simulated tissue by equating the thermally derived SAR to the E-field;

$$SAR = \frac{|E|^2 \cdot \sigma}{\rho}$$

where:
σ = Simulated tissue conductivity,
ρ = Tissue density (1.25 g/cm^3 for simulated tissue)

5.7. DATA EXTRAPOLATION (CURVE FITTING)

There is a distance from the center of the sensor (diode) to the end of the protective tube called 'probe offset'. To compensate we use an exponential curve fitting method to obtain the peak surface value from the voltages measured at the distance from the inner surface of the phantom. At the point where the highest voltage was recorded, the field is measured as close as possible to the phantom's surface and every 1mm along the ` Z ` axis for a distance of 50 mm. The appropriate exponential curve is obtained from all the points measured and used to define an exponential decay of the energy density versus depth.

$$E(z) = E_0 \cdot e^{-z/\delta} \text{ (mV)}$$

5.8. INTERPOLATION AND GRAM AVERAGING

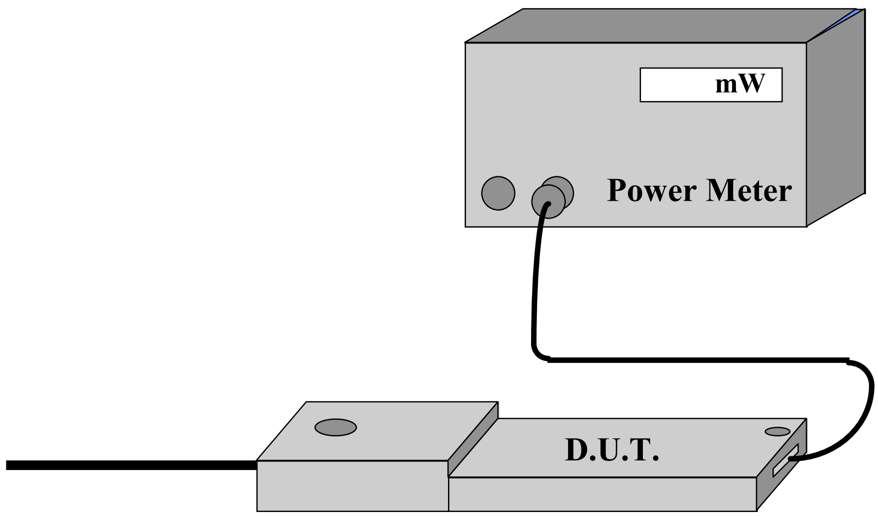
The voltage, (1 cm) above the phantoms surface (E_{tot} 1 cm), is needed to calculate the exposure over one gram of tissue. This SAR value that estimates the average over 1 gram of tissue, is obtained by taking the integral over 1 cm^2 surface of the measured field along the exponential decay curve of the energy density with depth.

$$SAR(mW/g) = \int_{v=1g} SAR(\bullet)dv = \int_{s=1cm^2} \int_0^{1cm} E(z) \cdot \frac{CF}{SensorFactor} dzds$$

5.9. POWER MEASUREMENT

When ever possible, a conducted power measurement is performed. To accomplish this, we utilize a fully charged battery, a calibrated power meter and a cable adapter provided by the manufacturer. The data of the cable and related circuit losses are also provided by the manufacturer. The power measurement is then performed across the operational band and the channel with the highest output power is recorded.

Power measurement is performed before and after the SAR to verify if the battery was delivering full power for the time of test. A difference in output power would determinate a need for battery replacement and repetition the SAR test.



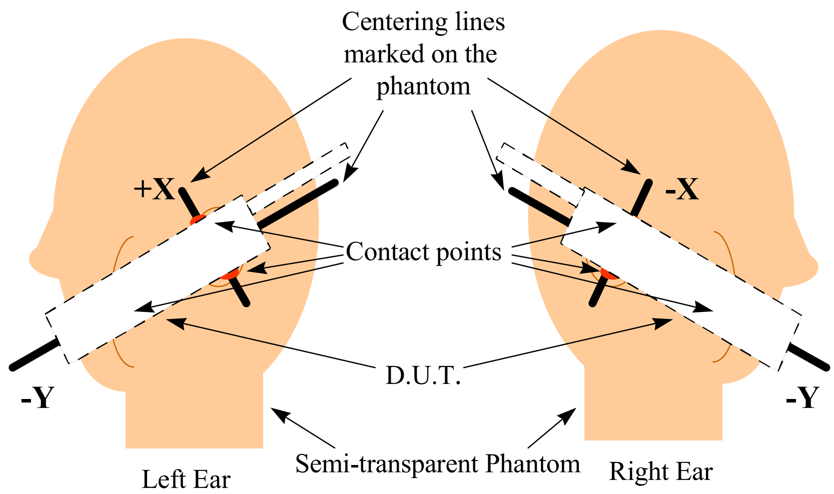
Measured Power Measured Power + Cable and Switching Mechanism Loss

5.10. POSITIONING OF D.U.T.

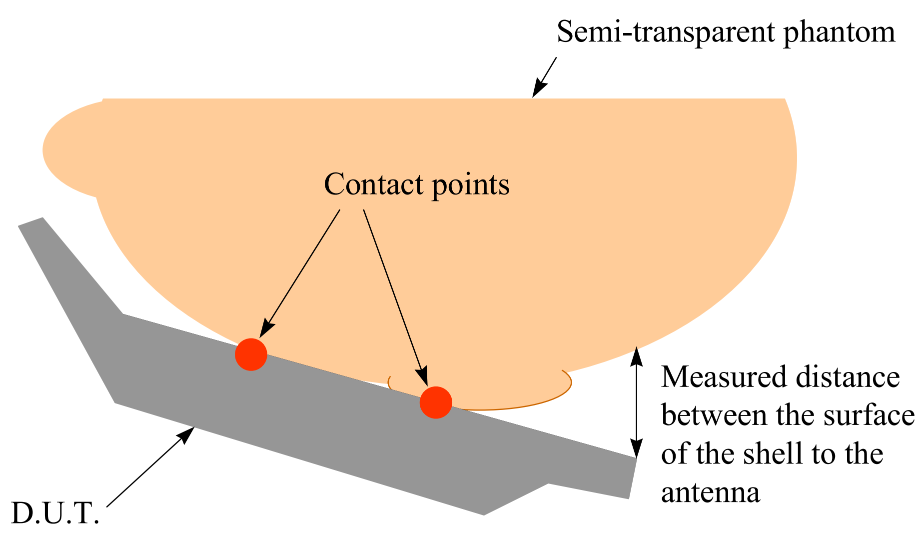
The clear fiberglass phantom shell have been previously marked with a highly visible line, so can easily be seen through the liquid simulated tissue. In the case of testing a cellular phone, this line is connecting the ear channel with the corner of the lips. The D.U.T. is then placed by centering the speaker with the ear channel and the center of the radio width with the corner of the mouth. At the same time the surface of the D.U.T. is always in contact with the phantoms shell. Three points contact; two in the ear region and one on the chin in addition to the previously describe alignment will assure repeatability of the test.

For HAND HELD devices (push-to-talk), or any other type of wireless transmitters, the D.U.T. will be positioned as suggested by manufacturer operational manuals.

Positioning of the D.U.T.



Side View



5.11. SAR MEASUREMENT UNCERTAINTY

This uncertainty analysis covers the 3D-EMC Laboratory test procedure for Specific Absorption Rate (SAR) associated with wireless telephones and similar devices.

Standards Covered Are:

WGMTE 96/4 - Secretary SC211/B

FCC 96-326, ET Docket No. 93-62

Industry Canada RSS 102

ACA Radiocommunications (Electromagnetic Radiation – Human Exposure) Amendment Standard 2000 (No. 1)

The laboratory test procedure, and this uncertainty analysis, may be used to cover all standards above. It is based on test equipment and procedures specified by 3D-EMC Laboratories, Inc. located in Ft. Lauderdale, Florida.

Measurement Uncertainty:

Table I. Estimated SAR Measurement Uncertainty

Contribution	Error (±dB)	Probability Distribution	Type Evaluation	Standard Uncertainty (±dB)
A. Field Measurement Errors:		Rectangular	Type B	
Isotropy in Phantom BTS Liquid	0.8			0.46
Frequency Response	0.2			0.12
Linearity	0.2			0.12
Probe Calibration Error (rss)	0.7			0.40
Duty Factor Variability	0.2			0.12
B. Spatial Peak SAR Errors:		Normal	Type A	
Extrapolation & Interpolation, and Position	0.2			0.20
Integration & Search Routine	0.1			0.10
Cube Shape	0.2			0.20
C. Additional Errors:		Rectangular	Type B	
Solution Variability (Worst-Case SAR)	0.21			0.12
D. Combined Standard Uncertainty, u_c:		Normal	-	0.52
E. Expanded Uncertainty, U:		Normal (k=2)	-	1.04
		95% Confidence	-	27.14%

ANNEX A: Waist SAR Measurement

896 MHz (1.63 W_{peak}) - 0.776 (7.183) W/Kg
901 MHz (1.54 W_{peak}) - 0.757 (7.009) W/Kg

* The 10.8 % duty factor, the source-based time averaging, is applied to evaluate the SAR and the value inside the parenthesis indicates the SAR with 100 % duty factor.

Test Information

Date : 11/16/00
Time : 10:20:51 AM

Product	: Elite 780 MOBITEX	**Test**	: SAR
Manufacturer	: IVI Checkmate INC.	**Frequency (MHz)**	: 896
Model Number	: ELite 780 Mobitex	**Nominal Output Power (W)**	: 1.6 peak
Serial Number	: 04069942-85904279	**Antenna Type**	: Monopole
FCC ID Number	: O34-Elite780MX	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 56.1
Simulated Tissue	: Muscle	**Conductivity**	: 0.99

Probe	: E	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 1.63 peak
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.768	**Cable Insertion Loss (dB)**	: 0.0
Calibrated Date	: 3/24/99	**Compensated Power (W)**	: 1.630 peak

Amplifier Setting :

Channel 1 : 0.0043 Channel 2 : 0.0037 Channel 3 : 0.0030

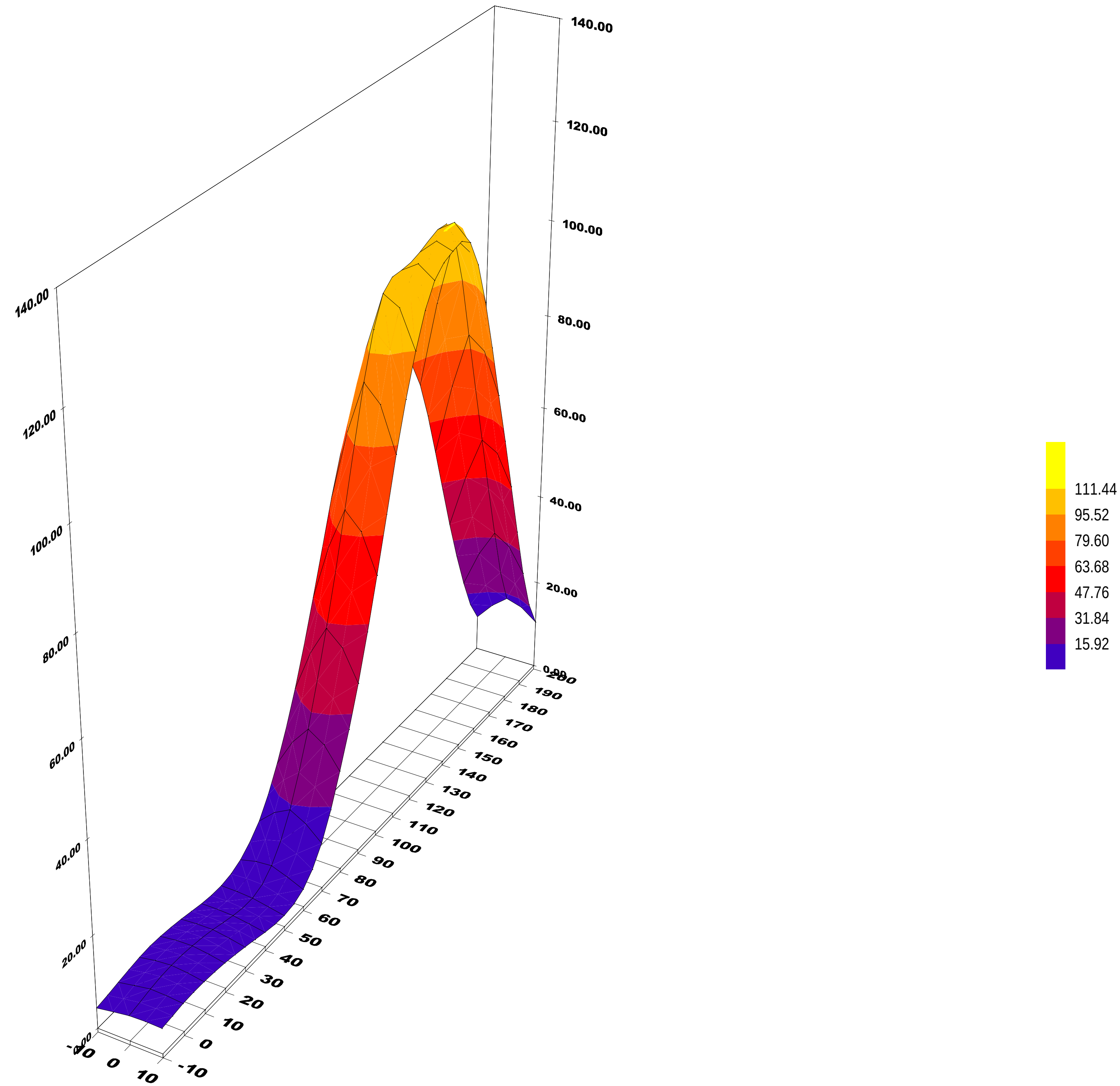
Location of Maximum Field :

X = 0 Y = 160

Measured Values (mV) :

126.866	102.022	89.115	79.606	72.377	65.836
60.741	55.623	51.605	47.429	44.225	

Peak Voltage (mV) : 138.338 **1 Cm Voltage (mV)** : 59.896 **SAR (W/Kg)** : 7.183



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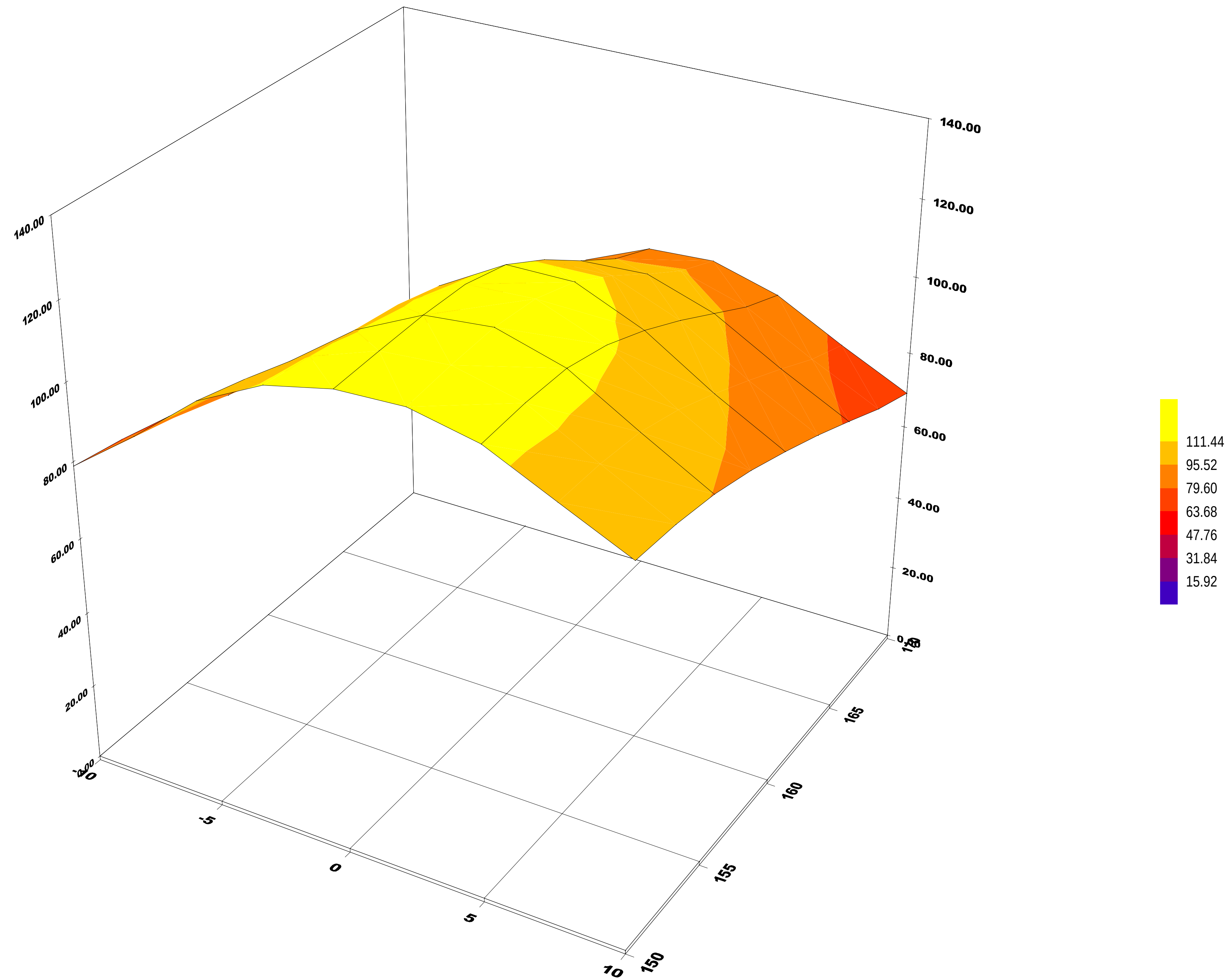

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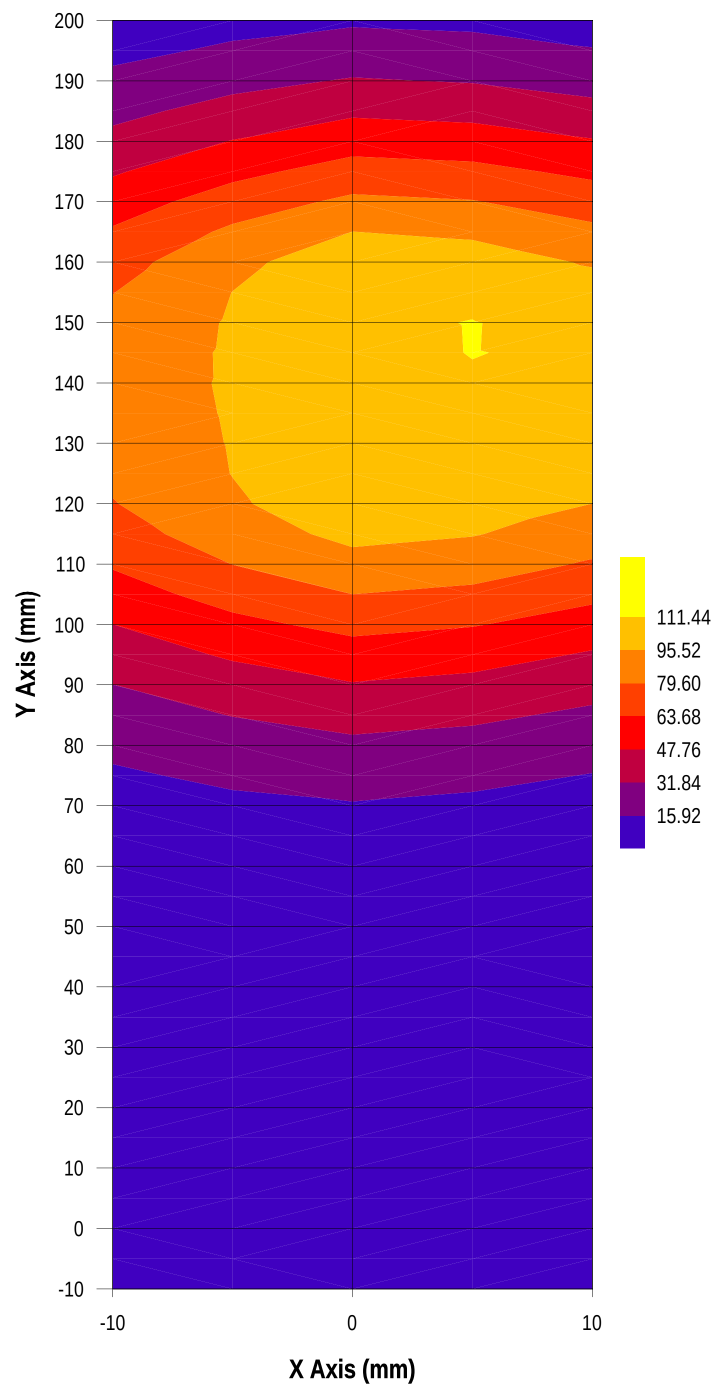

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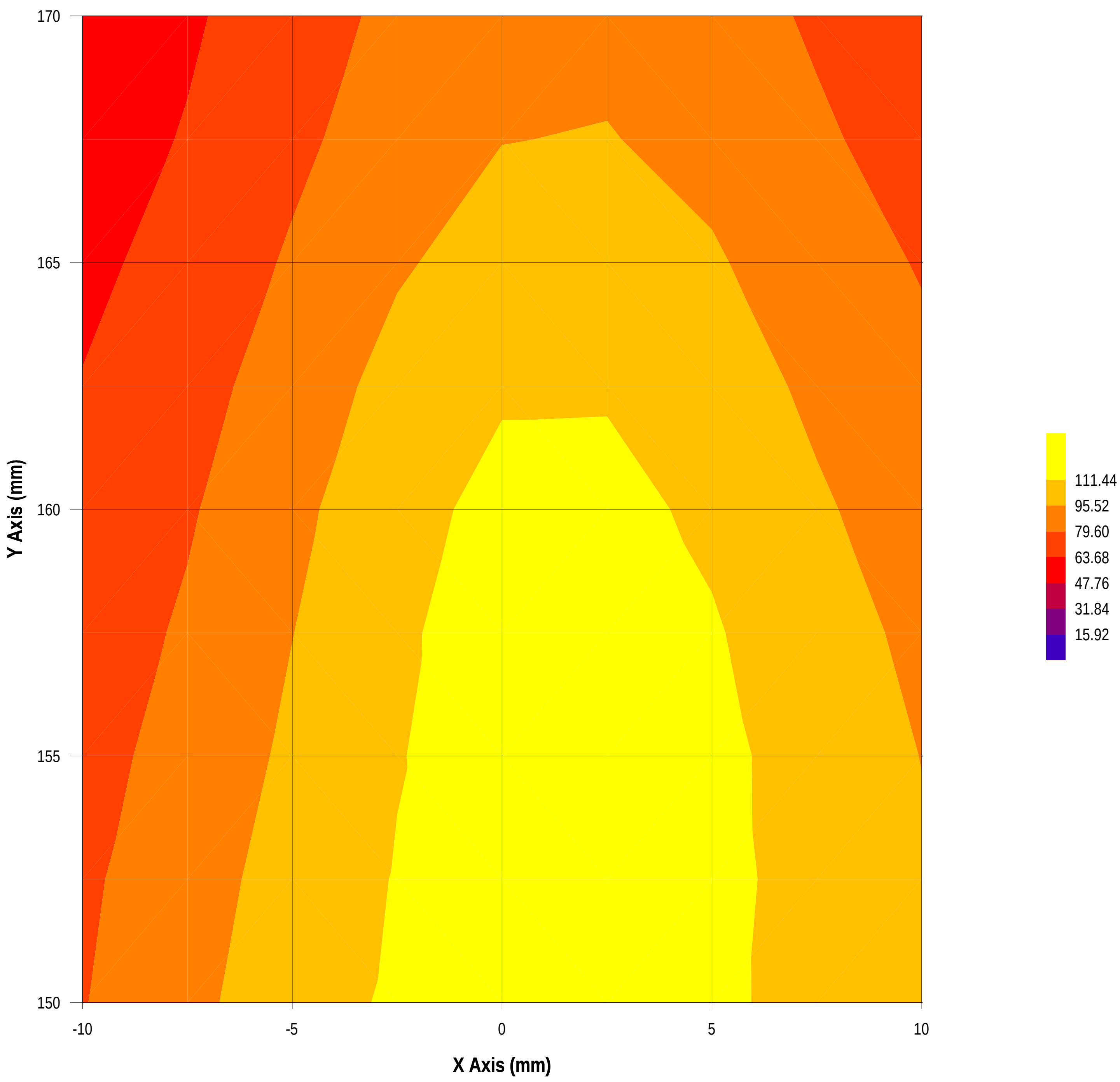

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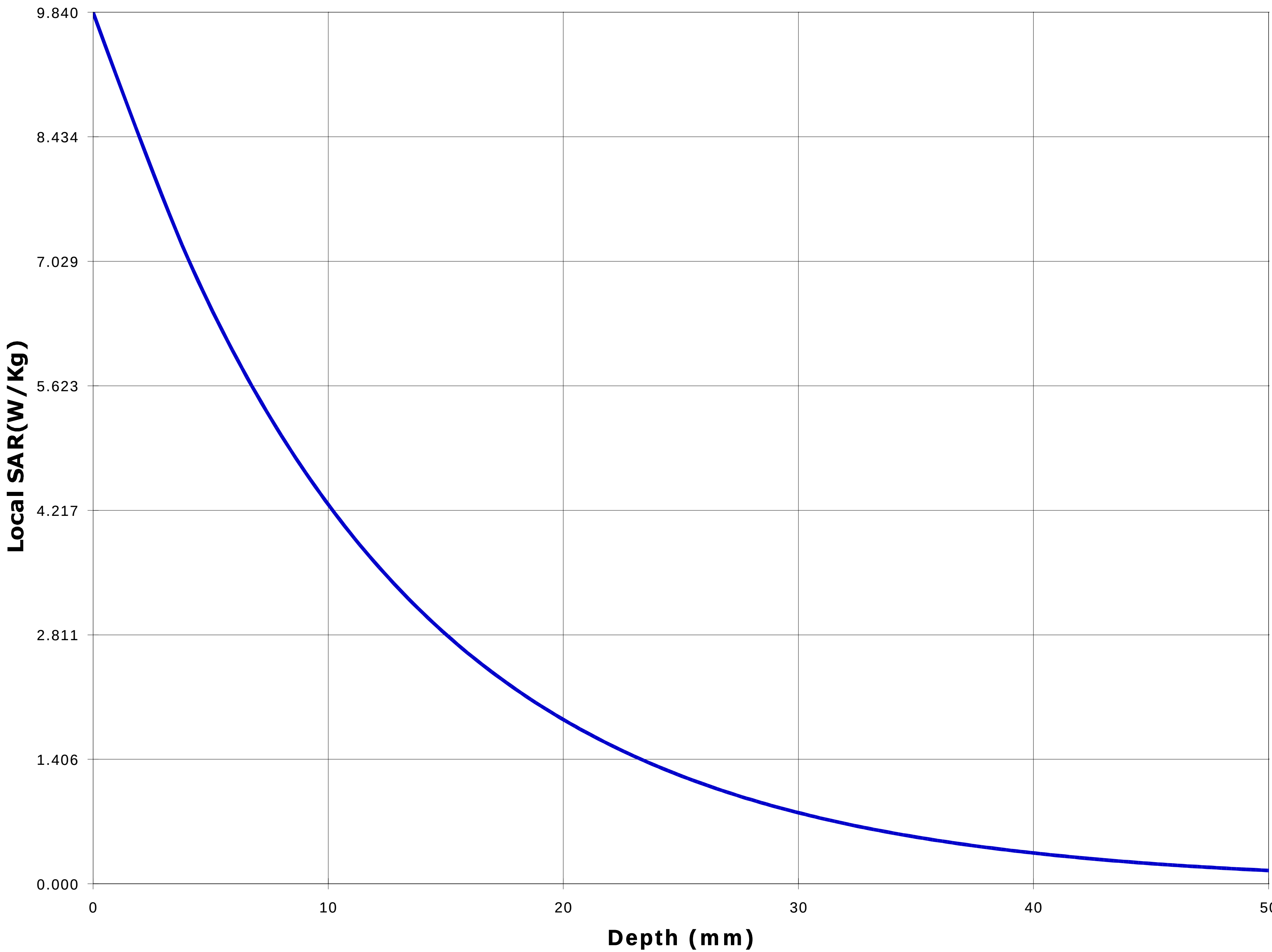
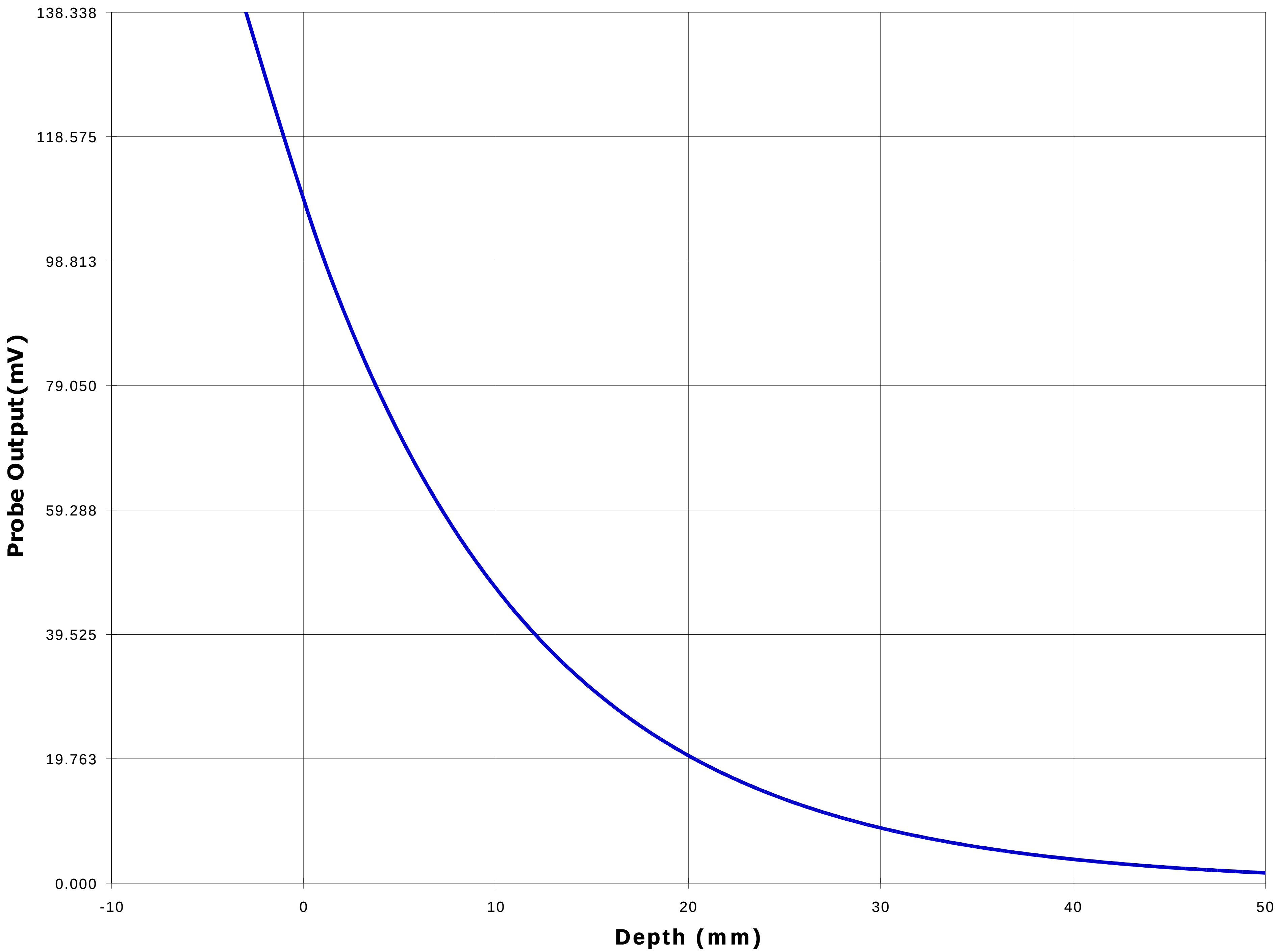


9.840
8.434
7.029
5.623
4.217
2.811
1.406
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


138.338
118.575
98.813
79.050
59.288
39.525
19.763
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/16/00
Time : 10:40:41 AM

Product	: Elite 780 MOBITEX	**Test**	: SAR
Manufacturer	: IVI Checkmate INC.	**Frequency (MHz)**	: 901
Model Number	: ELite 780 Mobitex	**Nominal Output Power (W)**	: 1.6 peak
Serial Number	: 04069942-85904279	**Antenna Type**	: Monopole
FCC ID Number	: O34-Elite780MX	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 56.1
Simulated Tissue	: Muscle	**Conductivity**	: 0.99

Probe	: E	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 1.54 peak
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.768	**Cable Insertion Loss (dB)**	: 0.0
Calibrated Date	: 3/24/99	**Compensated Power (W)**	: 1.540 peak

Amplifier Setting :

Channel 1 : 0.0043 Channel 2 : 0.0037 Channel 3 : 0.0030

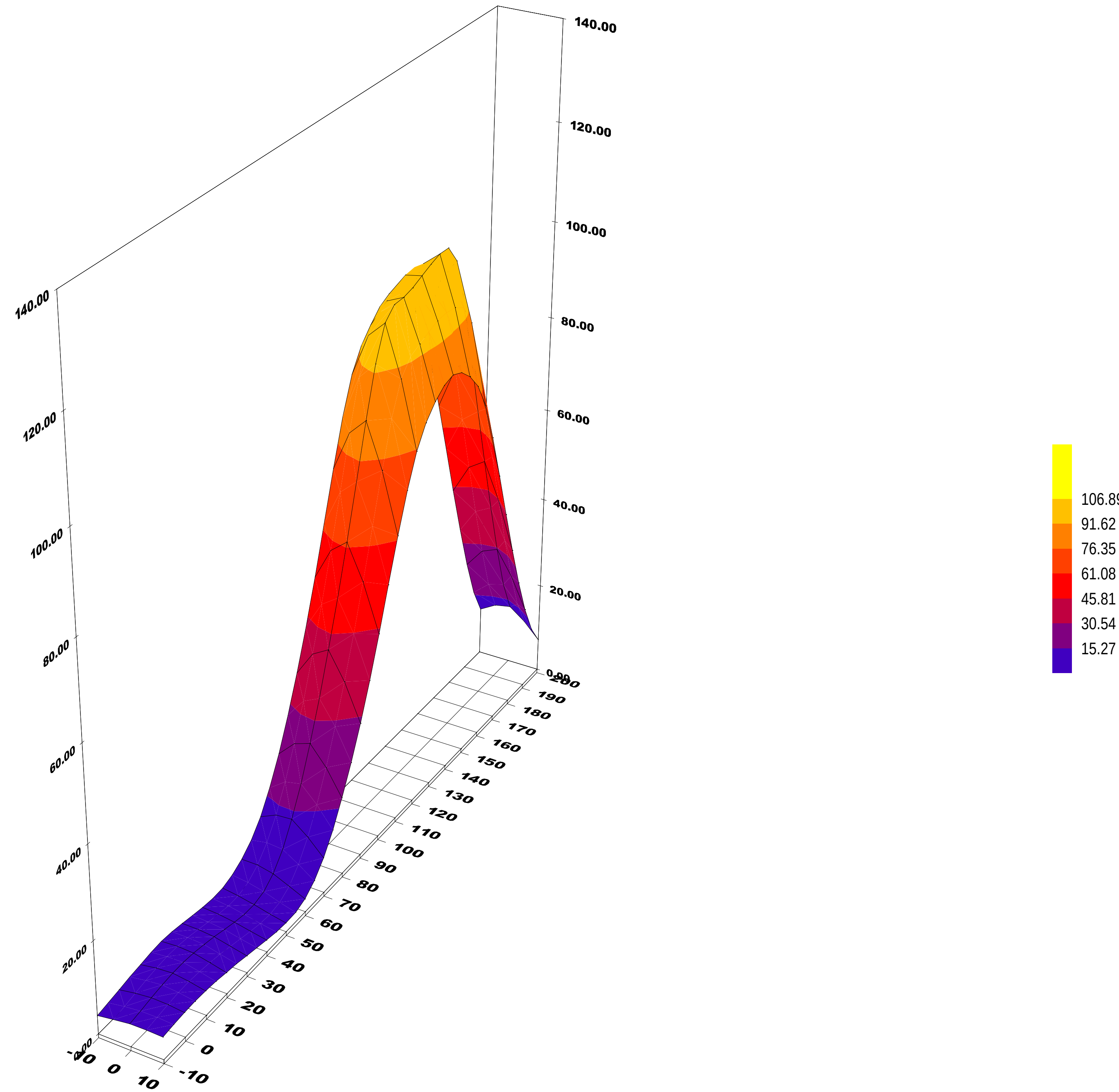
Location of Maximum Field :

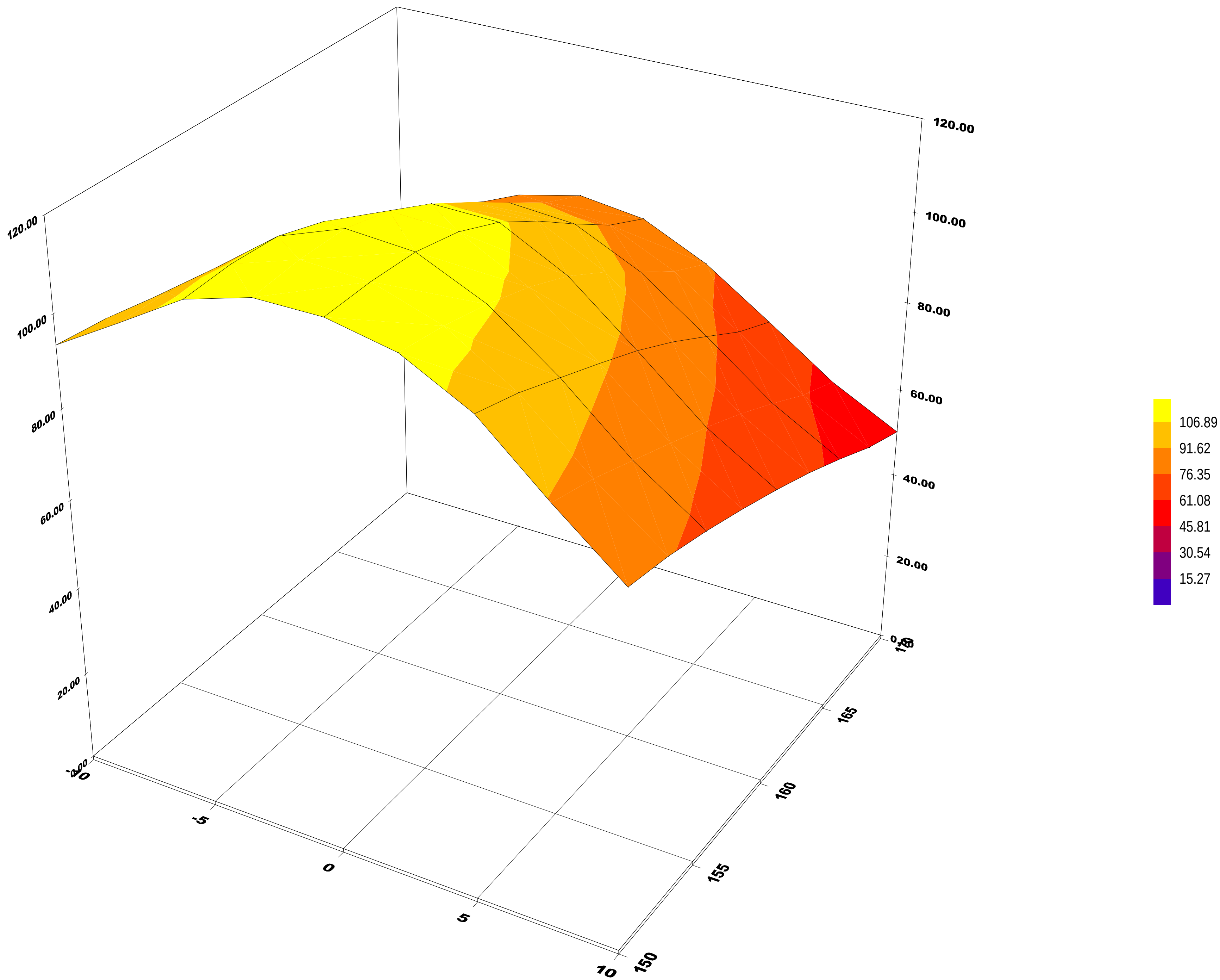
X = 0 Y = 155

Measured Values (mV) :

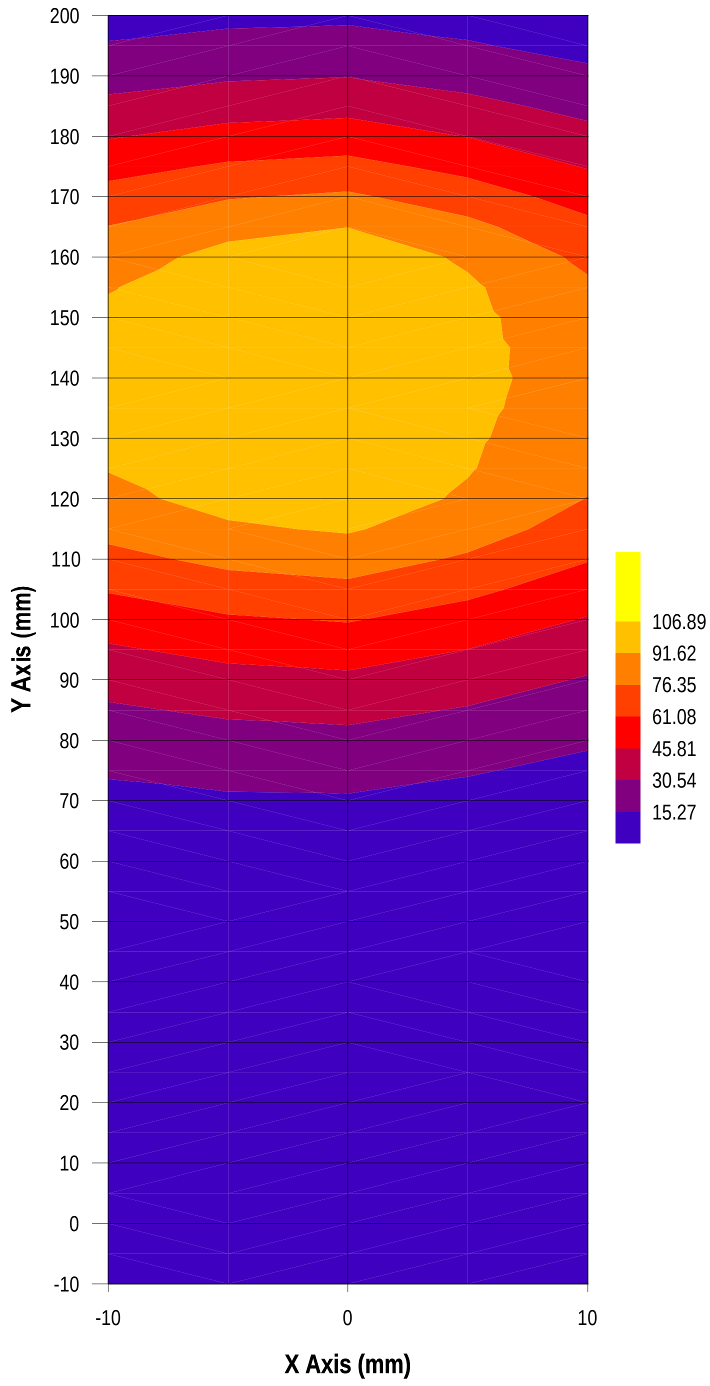
119.833	114.754	92.649	83.579	76.853	70.303
64.573	59.538	55.295	51.339	47.712	

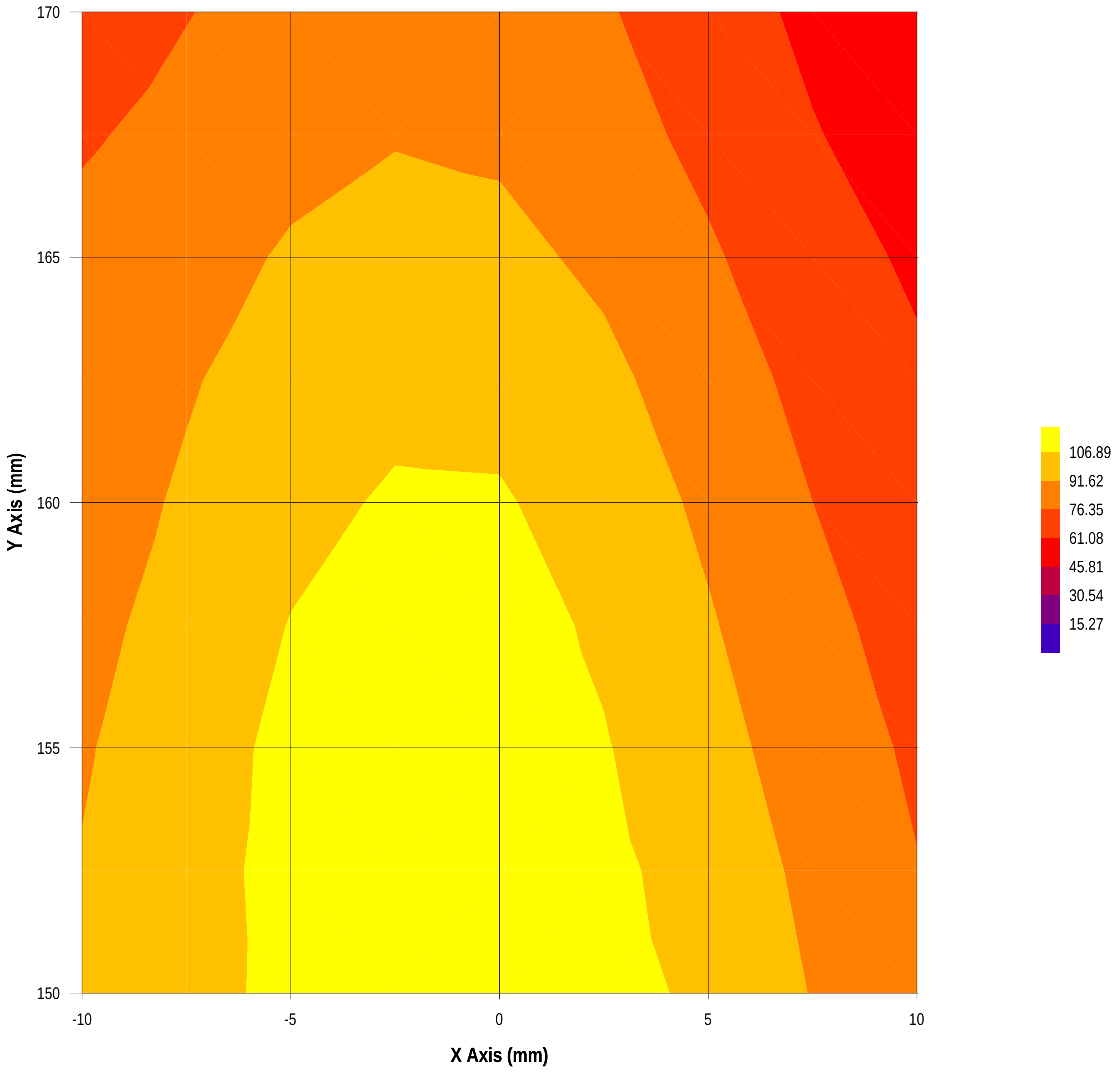
Peak Voltage (mV) : 138.685 **1 Cm Voltage (mV)** : 63.541 **SAR (W/Kg)** : 7.009

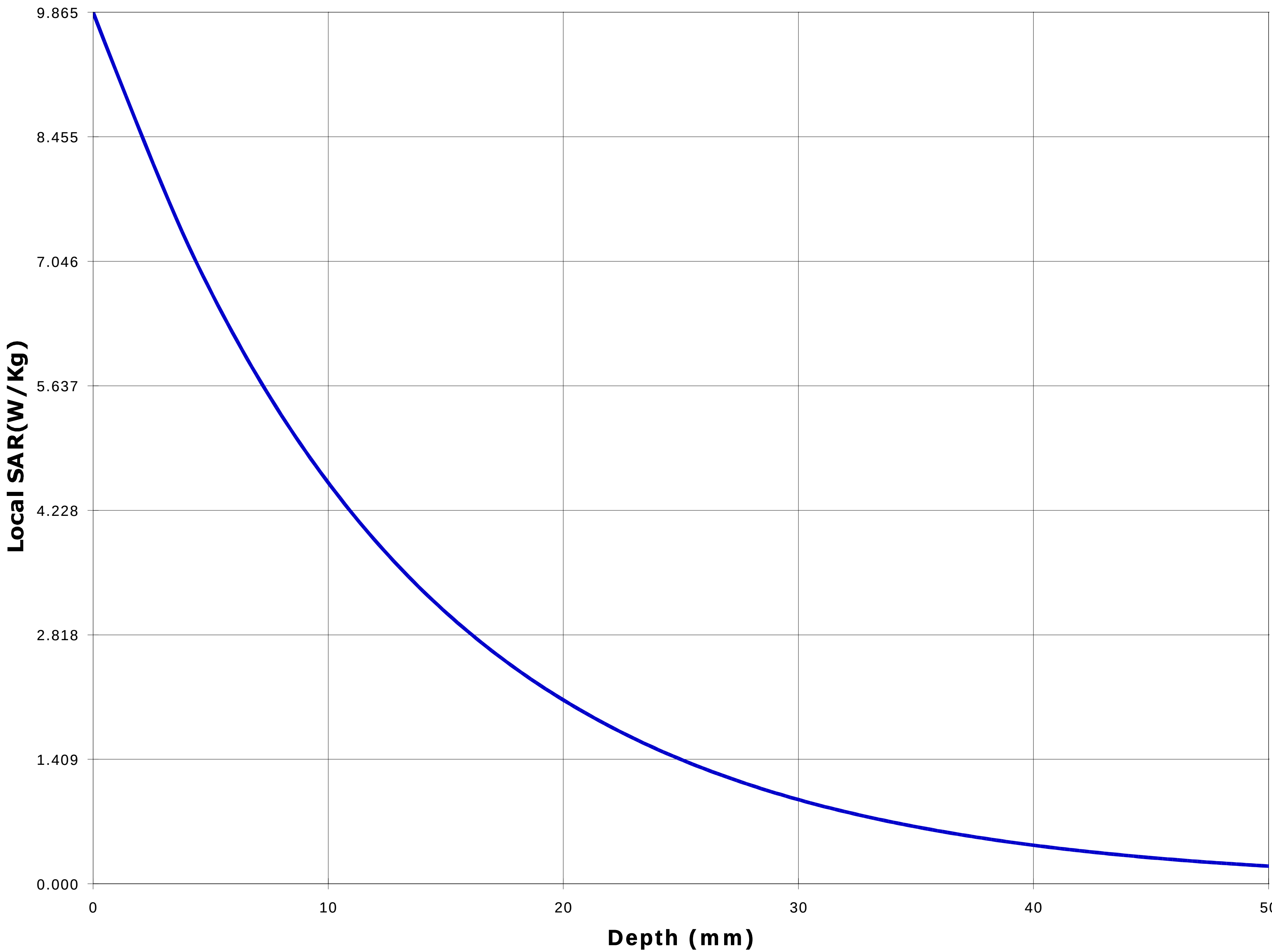

140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
-10
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
106.89
91.62
76.35
61.08
45.81
30.54
15.27



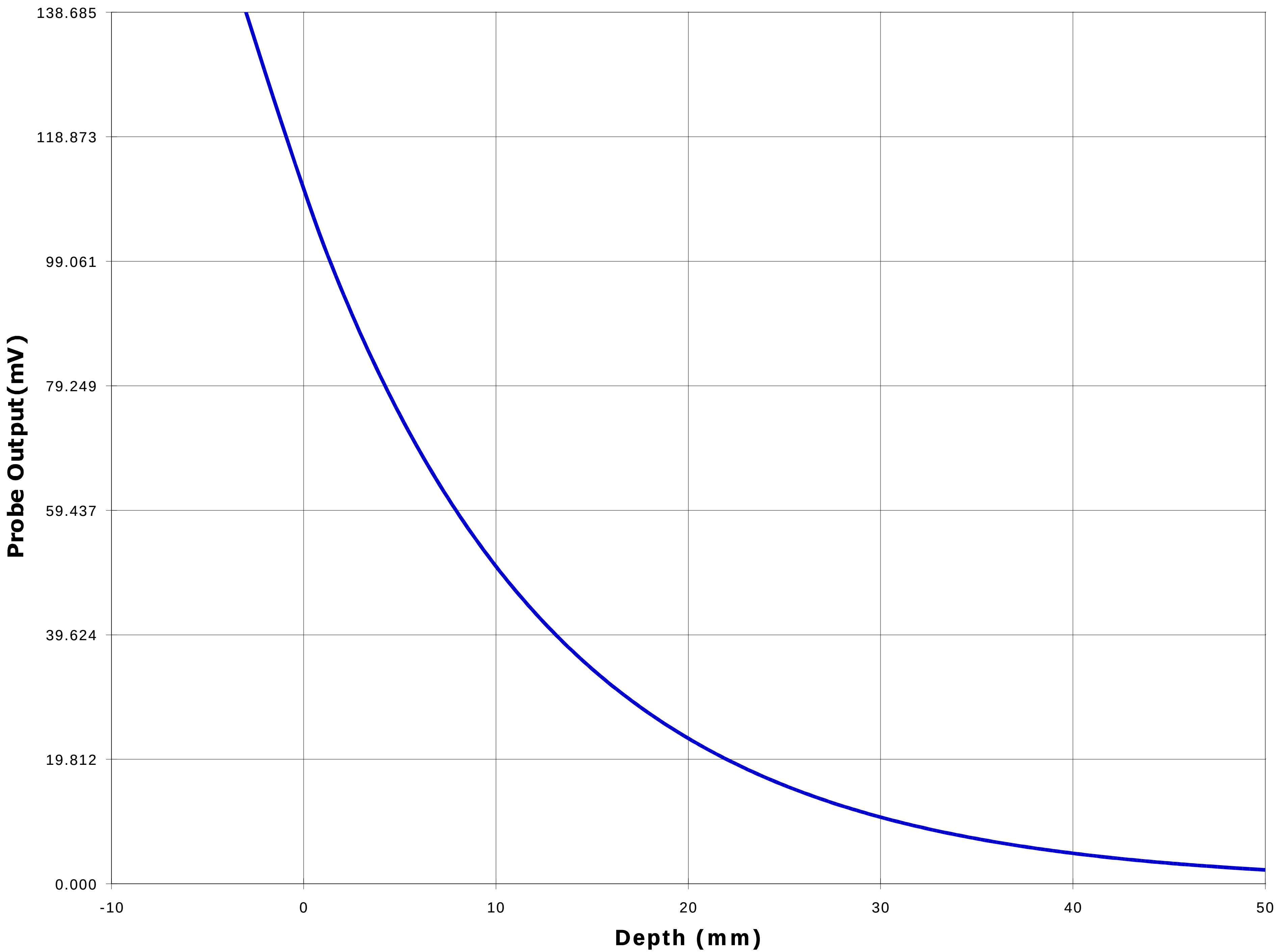
120.00
100.00
80.00
60.00
40.00
20.00
0.00
-10
-5
0
5
10
150
155
160
165
170
106.89
91.62
76.35
61.08
45.81
30.54
15.27


Y Axis (mm)
X Axis (mm)
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-10
0
10
106.89
91.62
76.35
61.08
45.81
30.54
15.27


170
165
160
155
150
-10
-5
0
5
10
Y Axis (mm)
X Axis (mm)
106.89
91.62
76.35
61.08
45.81
30.54
15.27



9.865
8.455
7.046
5.637
4.228
2.818
1.409
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)



138.685
118.873
99.061
79.249
59.437
39.624
19.812
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

ANNEX B: Tissue Calibration

Ultratech Group of Labs.
3000 Bristol Circle Road
Oakville, Ontario
Canada L6H 6G4

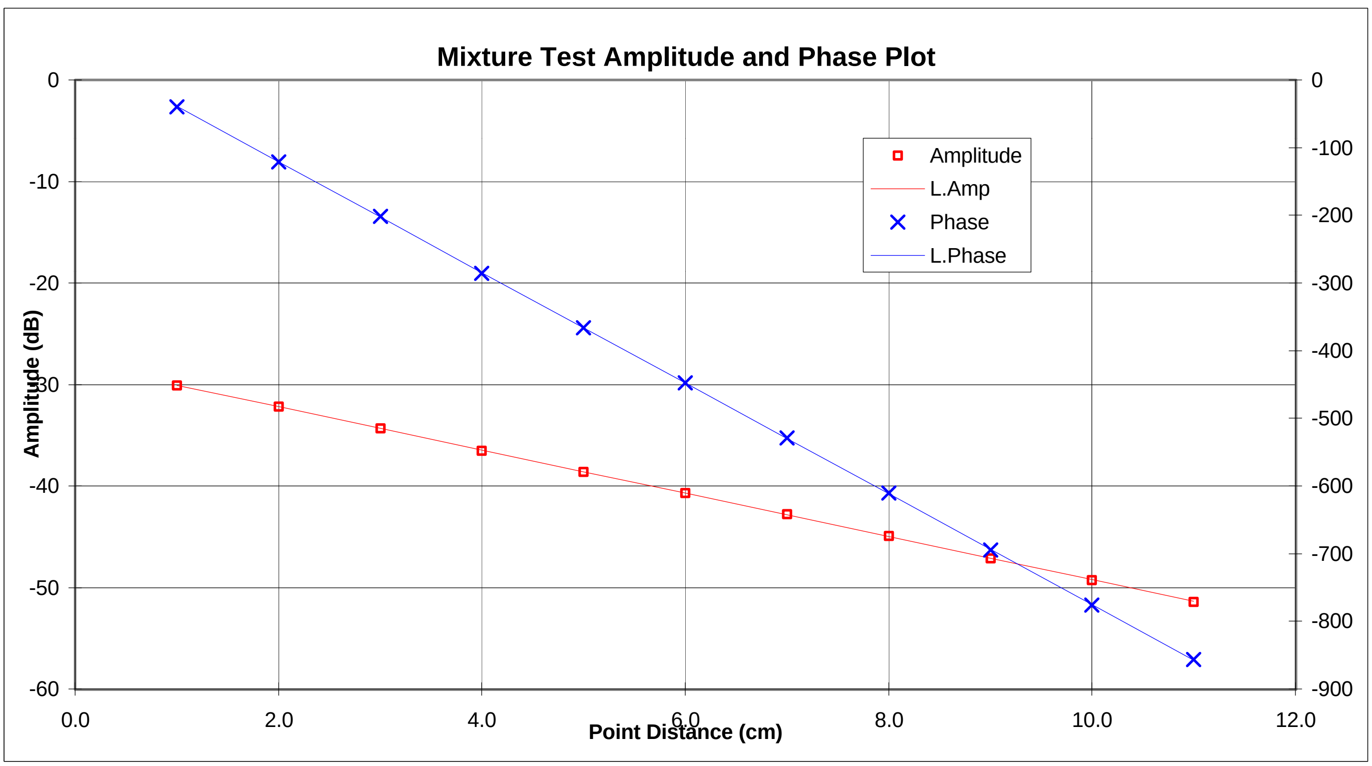
Phone (905) 829-1570
FAX (905) 829-8050
Email vhk.ultratech@sympatico.ca

Name:	Carolyn					**Date:**	11/10/2000
Frequency:	896	MHz	**Mixture:**	Muscle		**Room Temp.:**	24 °C
# of Points:	11		**Point Dist:**	1	cm		

Point	Amplitude	Phase
1	-30.10	-39.70
2	-32.20	-120.70
3	-34.30	158.00
4	-36.50	74.50
5	-38.60	-6.10
6	-40.70	-87.90
7	-42.80	-169.30
8	-44.90	109.50
9	-47.10	25.80
10	-49.30	-56.00
11	-51.40	-136.70

Composition		
	weight	% in weight
Tap Water	35,402.4 g	53.42 %
DI Water	0.0 g	0.00 %
Sugar	29,957.4 g	45.20 %
Alcohol	0.0 g	0.00 %
Salt	528.0 g	0.80 %
HEC	350.0 g	0.53 %
Bactericide	35.0 g	0.05 %
	0.0 g	0.00 %
	0.0 g	0.00 %
	0.0 g	0.00 %

Results:		Target	Low Limit	High Limit	% Off Target
D. Const:	56.1	55.9	53.105	58.695	0.31
Conductivity:	0.99	0.97	0.9215	1.0185	2.02



ANNEX C: Duty Cycle Factor

DUTY CYCLE MEASUREMENT

The manufacturer has provided samples of the radio device configured for the worst case duty cycle measurements. Measurement from these samples obtained a worst case duty cycle of 10.8 %.

$$Duty\,Cycle = \frac{TIME\,ON}{TIME\,ON + TIME\,OFF} = \frac{0.2214\sec + 0.0429\sec \times 2}{2.857\sec} \times 100\% = 10.8\%$$