UltraTech
Group of Labs

November 22, 2000

ICOM Incorporate
1-6-19 Kamikurazukuri Hirano-Ku
Osaka, Japan, 547

Attn.: **Mr. Tadashi Maebayshi**

Subject: **Verification Testing 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 (Issue 1)
ACA Radiocommunications (Electromagnetic Radiation – Human Exposure) Amendment Standard 2000 (No. 1)

Product: **VHF Transceiver**
Model: **IC-F30GT**

Dear Mr. Maebayshi

The product sample has been tested 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(Issue 1) and ACA Radiocommunications (Electromagnetic Radiation – Human Exposure) Amendment Standard 2000 (No. 1),** and the results and observation were recorded in the engineering report, Our File No.: ICOM-019-SAR

Enclosed you will find a copy of the engineering report. If you have any queries, please do not hesitate to contact us.

Yours truly,

Tri Minh Luu, P.Eng
Vice President - Engineering

Encl.

3000 Bristol Circle,
Oakville, Ontario, Canada
L6H 6G4

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CERTIFICATE OF COMPLIANCE

October 22, 2000 File No.: ICOM-019-SAR

ICOM Incorporate
1-6-19 Kamikurazukuri Hirano-Ku
Osaka, Japan, 547

NOT TRANSFERABLE

This Verification Certificate is hereby issued to the named GRANTEE and is VALID ONLY for the equipment identified hereon for use under the rules and regulations listed below:

GRANTEE'S NAME:	**ICOM Incorporate**
PRODUCT UNDER TEST:	**VHF Transceiver**
MODEL NO.:	**IC-F30GT**
FCC ID:	**AFJ IC-F30G**
OPERATING FREQUENCY RANGE:	**136.05-173.95 MHz**
NOMINAL RF OUTPUT POWER:	**5.0 W Peak/Average**
MAXIMUM S.A.R.:	**4.465 W/Kg**

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

- Assessed by ITI (UK) Competent Body, NVLAP (USA) Accreditation Body & ACA/AUSTEL (Australia), VCCI (Japan)
- Accredited by Industry Canada (Canada) under ACC-LAB (Europe/Canada MRA and APEC/Canada MRA)
- Recognized/Listed by FCC (USA)
- *All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST Technology (NIST)*

Approved by: Tri M. Luu, P.Eng.
V.P. – Engineering

UltraTech

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ENGINEERING TEST REPORT

VHF Transceiver
Model No.: IC-F30GT

Tested For

ICOM Incorporate
1-6-19 Kamikurazukuri Hirano-Ku
Osaka, Japan, 547

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

UltraTech's File No.: ICOM-019-SAR

This Test report is Issued under the Authority of Tri M. Luu, Professional Engineer, Vice President of Engineering UltraTech Group of Labs Date: November 22, 2000	
Report Prepared by: Carolyn Luu Issued Date: November 22, 2000	Tested by: JaeWook Choi Test Dates: November 16, 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	[ ] General population, uncontrolled exposure **[X] 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:	ICOM Incorporate
Address:	1-6-19 Kamikurazukuri Hirano-Ku Osaka, Japan , 547
Contact Person:	Mr. Tadashi Maebayshi Phone #: 0118167 Email Address: export@icom.co.jp

MANUFACTURER:	
Name:	ICOM Incorporated
Address:	1-6-19 Kamikurazukuri Hirano-Ku Osaka, Japan, 547
Contact Person:	ICOM Incorporated Phone #: 0118167 Email Address: export@icom.co.jp

2.2. DEVICE UNDER TEST (DUT) DESCRIPTION

The following information are supplied by the applicant.

Trade Name	ICOM Inc.
Type/Model Number	IC-F30GT
Serial Number	0015
Type of Equipment	VHF Transceiver
Frequency of Operation	136.05-173..95 MHz
Rated RF Power	5.0 W
Duty Cycle	50 %
Modulation Employed	Frequency Modulation
Antenna Type	Monopole
External Power Supply	Ni-MH Battery (7.2V/1650mAh) Ni-Cd Battery (7.2V/1100mAh)
Primary User Functions of DUT:	Voice Radio Communication Through Air

2.3. LIST OF DUT'S ACCESSORIES:

<Battery Charger, BC-137 >

<AC adapter, BC-122>

<Battery Charger, BC-119 + AD-94>

<AC adapter BC-124 >

< Battery pack : Ni-MH 7.2V/1650mAh, BP-210 >

< Battery pack : Ni-Cd 7.2V/1100mAh, BP-209 >

< Speaker-Microphone, EM-80 >

< Belt clip, MB-68 >

< Belt clip(alligator type), MB-74 >

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

None

2.5. ANCILLARY EQUIPMENT

Battery Charger, Belt Clip, AC Adapter, Battery NI-Cd-7.2V/1100mAh, Battery Ni-MH-7.2V/1650mAh,

2.6. GENERAL TEST CONFIGURATIONS

2.6.1. 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.

2.6.2. 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.

2.7. SPECIFIC OPERATING CONDITIONS

Not specified.

2.8. BLOCK DIAGRAM OF TEST SETUP

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

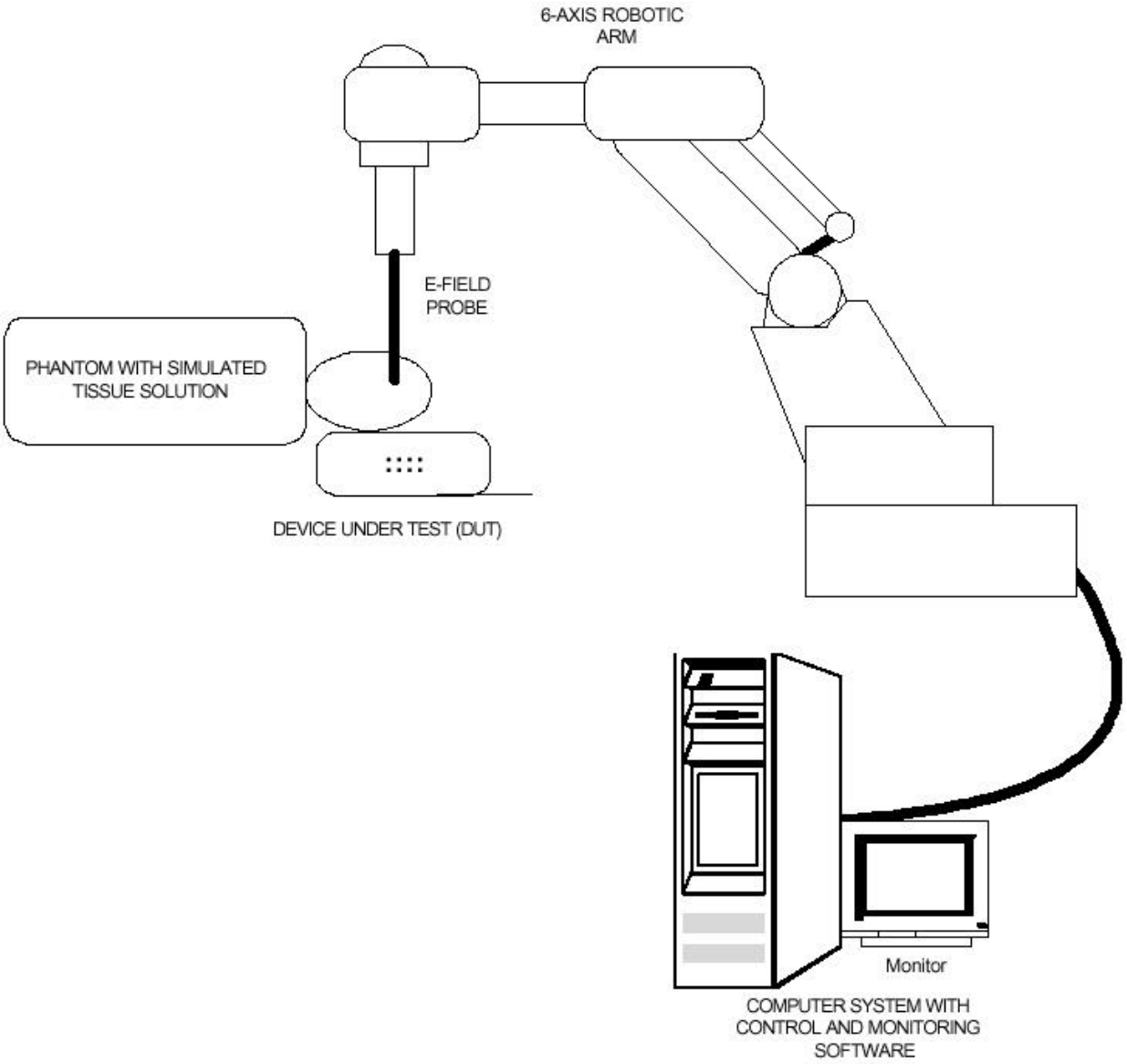

EXHIBIT 3. SUMMARY OF TEST RESULTS

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 peak spatial - average SAR measured was found to be 8.930W/Kg

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)	N/A
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)	Yes

EXHIBIT 4. MEASUREMENTS, EXAMINATIONS & TEST DATA

4.1. TEST SETUP

EUT Information		Condition	
Radio Type	VHF Transceiver	Robot Type	6 Axis
Model Number	IC-F30GT	Scan Type	SAR
Serial Number	0015	Measured Field	E
Frequency Band (MHz)	136.05-173.95	Phantom Type	Open back full body
Frequency Tested (MHz)	136.05, 155.05, 173.95	Phantom Position	Waist, Head-front
Nominal Output Power (W)	5.0	Room Temperature	25 ± 1 °C
Antenna Type	Attachable Monopole		
Signal Type	CW		
Duty Cycle	50% (Half-duplex type PTT*)		

Type of Tissue	Brain	Muscle		
Target Frequency (MHz)	150	150		
Target Dielectric Constant	60.2	62.7		
Target Conductivity (S/m)	0.48	0.75		
Composition (by weight)	Tap Water (49.23%) Sugar (49.14%) Salt (1.45%) HEC (0.14%) Bactericide (0.05%)	Tap Water (49.82 %) Sugar (47.41%) Salt (2.21%) HEC (0.51 %) Bactericide (0.05%)		
Measured Dielectric Constant	62.8	63.0		
Measured Conductivity (S/m)	0.50	0.78		
Probe Name	E	E		
Probe Orientation	Isotropic	Isotropic		
Probe Offset (mm)	3.00	3.00		
Sensor Factor	10.8	10.8		
Conversion Factor	0.414	0.545		
Calibration Date (MM/DD/YY)	11/14/00	11/14/00		

* EUT is transmitting with 100% duty cycle but **50% duty factor** can only be applied for truly PTT device, that is using a mechanical switch and the device is designed for PTT that does not have feasibility to be connected to wired lines through an operator.

4.2. PHOTOGRAPH OF EUT

< Front View >

< Rear View >

4.3. PHOTOGRAPHS OF EUT POSITION

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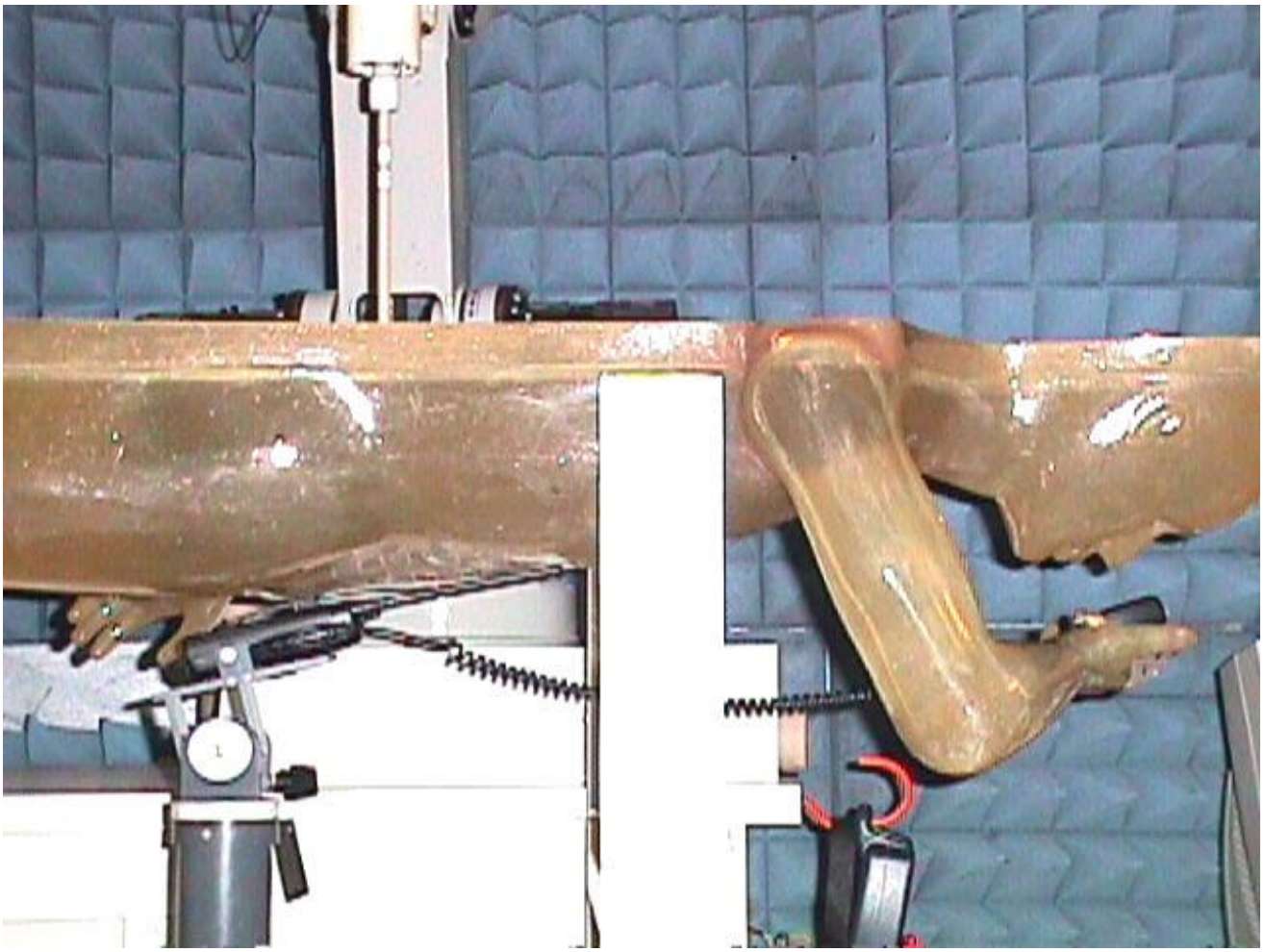
< Overview – Waist with normal belt clip and the antenna positioned parallel with the phantom >

< Close-up view – Waist with normal belt clip and the antenna positioned parallel with the phantom >

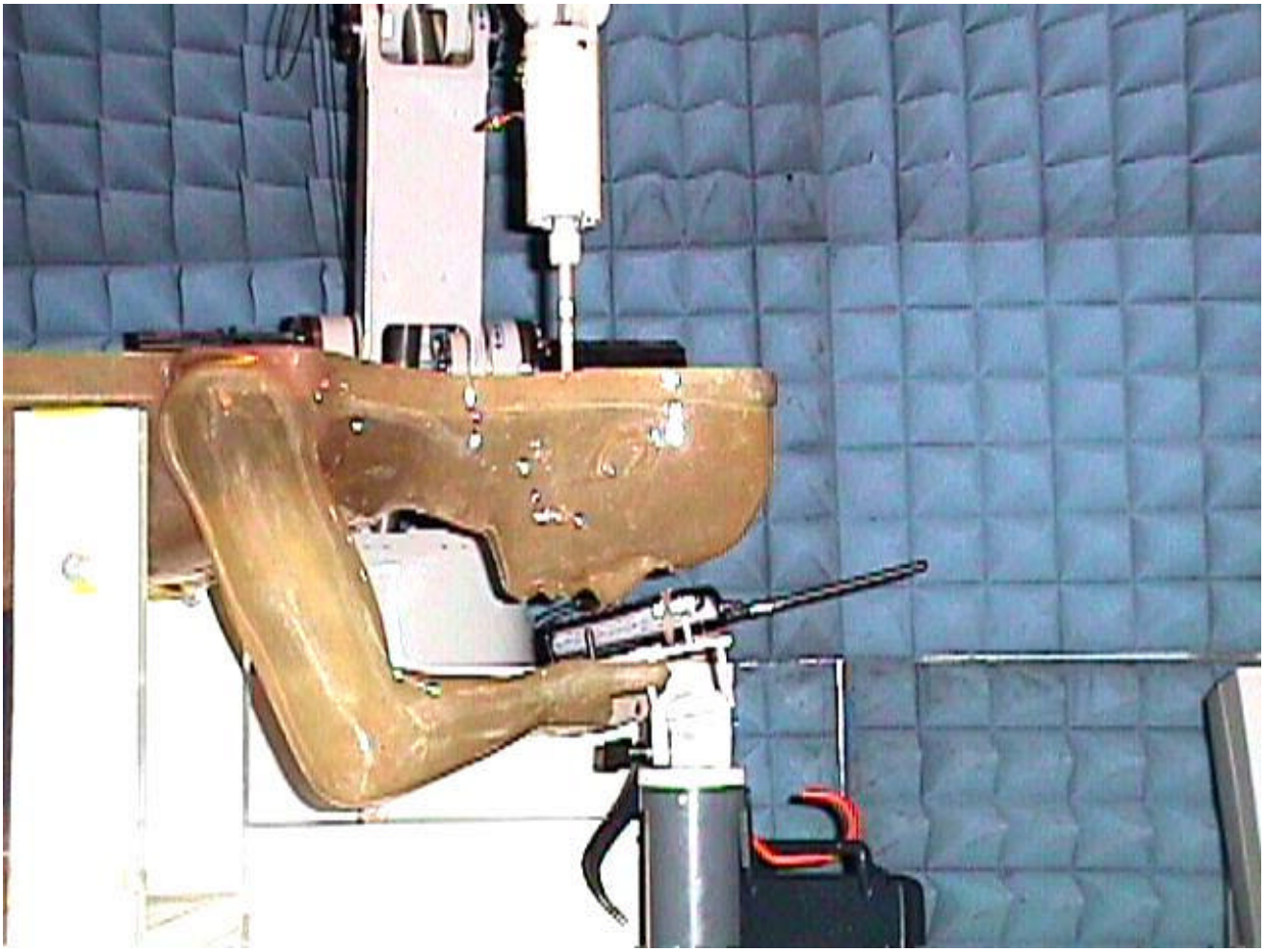


<Overview – Waist with normal belt clip and the antenna touching the phatom>

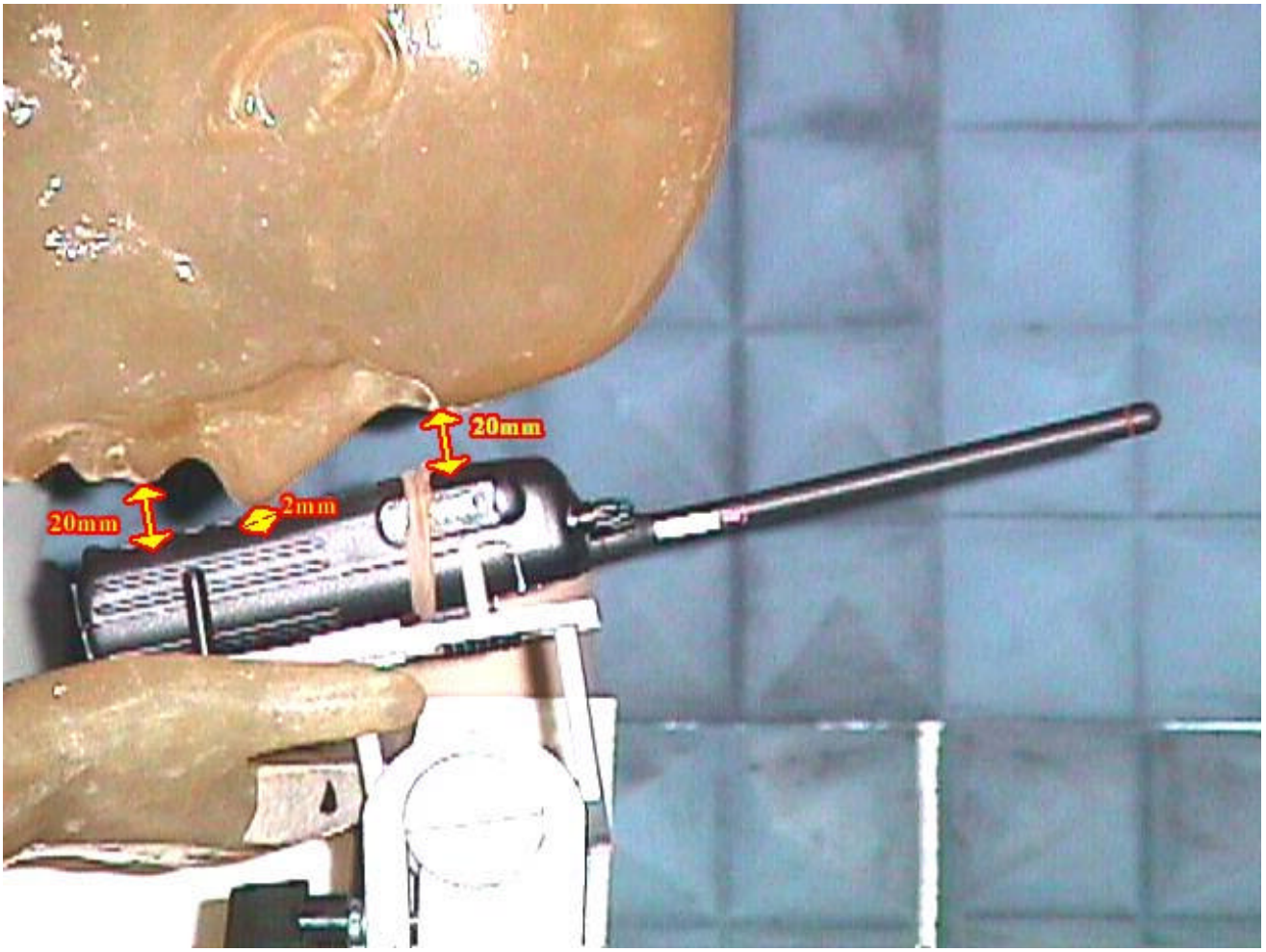
< Close-up view – Waist with normal belt clip and the antenna Touching the phantom >

< Overview – Waist with alligator belt clip and the antenna touching the phantom >

< Close-up view – Waist with alligator belt clip and the antenna touching the phantom >

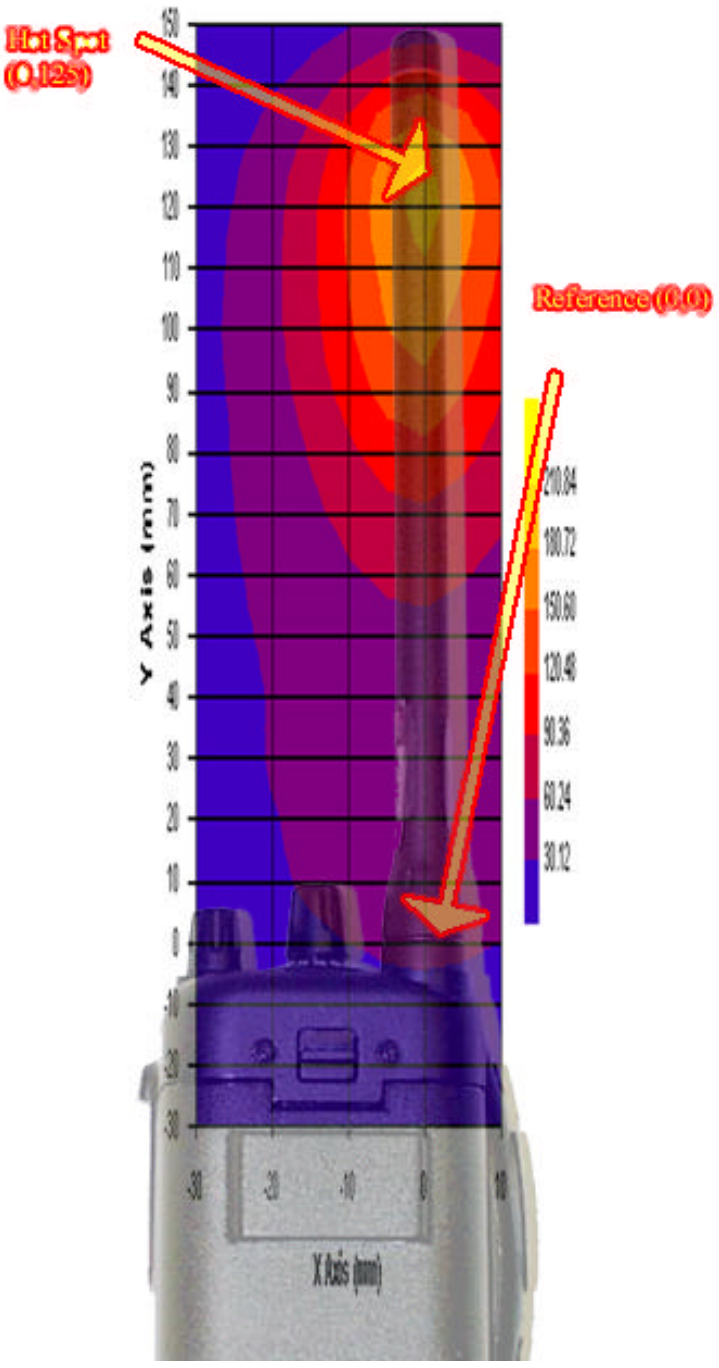


< **Overview – Head-front with the antenna positioned parallel with the phantom** >



< Close-up view – Head-front with the antenna positioned parallel with the phantom >

4.4. MAXIMUM FIELD LOCATION (REFER TO P. 24)



4.5. PEAK SPATIAL-AVERAGE SAR MEASURED

Maximum Field at (0, 125)				
DUT Positioning	Frequency (MHz)	Measured Power (W)	SAR (W/Kg)	DUT Configuration
Waist	136.05 W	4.93	4.465 (8.930)	Waist with large capacity battery pack, alligator belt-clip, 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	136.05 W	4.89	2.390 (4.781)	Waist with large capacity battery pack, normal belt-clip, antenna parallel to the phantom
	155.05 W	4078	0.934 (1.868)	
	173.95 W	4.90	0.329 (0.659)	
	136.05 N	4.94	2.542 (5.085)	
	155.05 N	4.80	0.906 (1.812)	
	173.95 N	4.95	0.355 (0.711)	
	136.05 W	4.92	2.719 (5.438)	Waist with large capacity battery pack, normal belt-clip, the tip of the antenna in contact with the phantom
	155.05 W	4.80	0.845 (1.690)	
	173.95 W	4.90	0.809 (1.618)	
	136.05 N	4.94	2.748 (5.497)	
	155.05 N	4.80	0.795 (1.590)	
	173.95 N	4.95	0.763 (1.527)	
	136.05 W	4.93	4.465 (8.930)	Waist with large capacity battery pack, alligator belt-clip, the tip of the antenna in contact with the phantom
	155.05 W	4.75	1.355 (2.711)	
	173.95 W	4.90	1.006 (2.012)	
	136.05 N	4.90	4.286 (8.572)	
	155.05 N	4.75	1.335 (2.671)	
	173.95 N	4.89	0.918 (1.836)	

*** The SAR Measurement inside the parenthesis indicates the reading before 50 % duty factor is applied for the half-duplex type PTT.**

DUT Positioning	Frequency (MHz)	Measured Power (W)	SAR (W/Kg)	DUT Configuration
Head-front	136.05 W	4.98	0.942 (1.885)	Head front with large capacity battery pack
	155.05 W	4.95	1.904 (3.09)	
	173.95 W	4.92	2.923 (5.847)	
	136.05 N	4.91	1.007 (2.015)	
	155.05 N	4.96	2.250 (4.501)	
	173.95 N	4.92	3.138 (6.276)	

*** The SAR Measurement inside the parenthesis indicates the reading before 50 % duty factor is applied for the half-duplex type PTT.**

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 ^{o}C 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

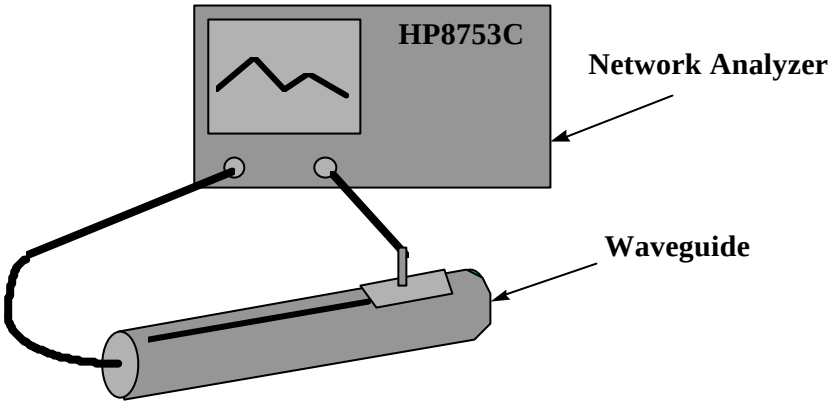
2) Slotted Coaxial Waveguide

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



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

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

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

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

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

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

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

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

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

where;

ΔA is the amplitude attenuation in dB

$\Delta\theta$ 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

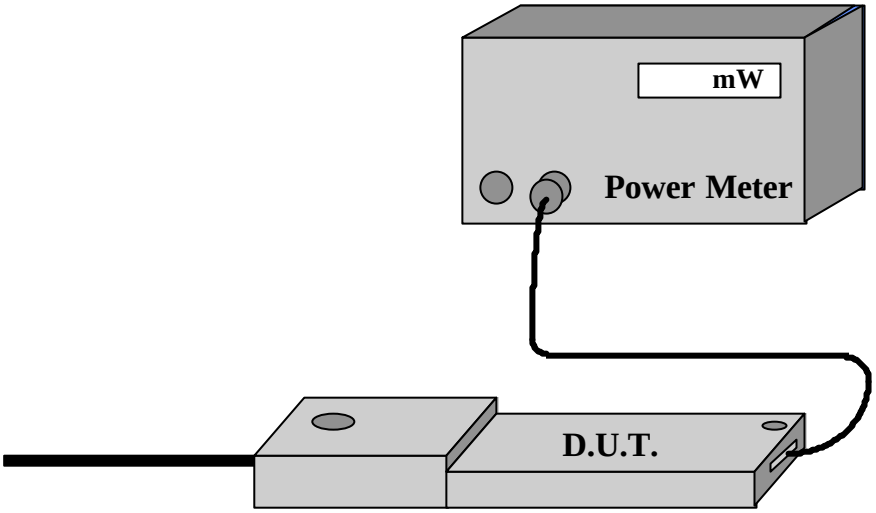
The voltage, (1 cm) above the phantoms surface (E_{tot} 1 cm), is needed to calculate the exposure over one gram of tissue. This SAR value that estimates the average over 1 gram of tissue, is obtained by taking the integral over 1 cm^2 surface of the measured field along the exponential decay curve of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



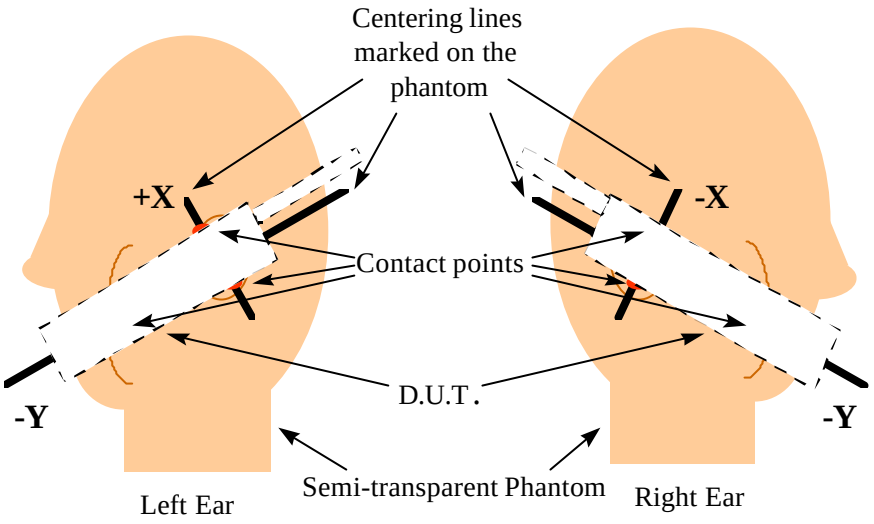
Measured Power Measured Power + Cable and Switching Mechanism Loss

5.10. POSITIONING OF D.U.T.

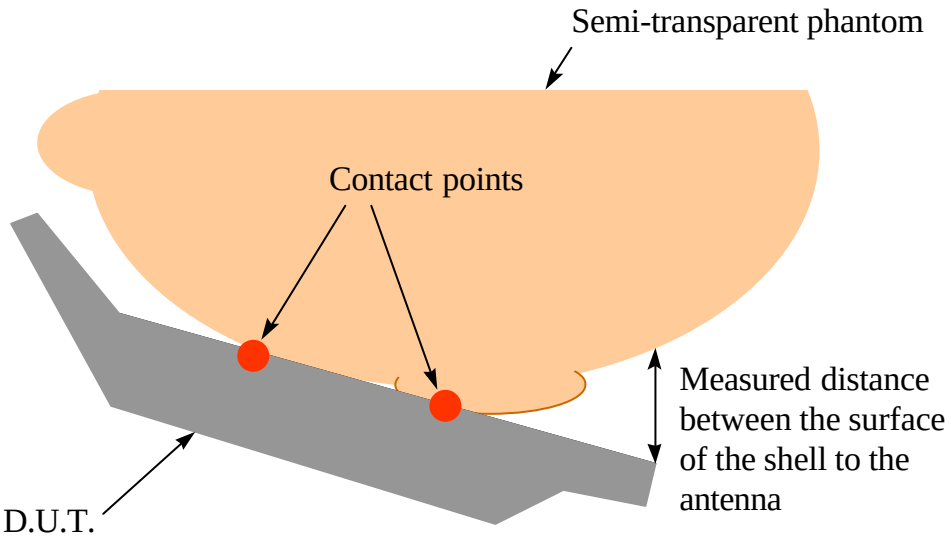
The clear fiberglass phantom shell have been previously marked with a highly visible line, so can easily be seen through the liquid simulated tissue. In the case of testing a cellular phone, this line is connecting the ear channel with the corner of the lips. The D.U.T. is then placed by centering the 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

Waist with the large capacity battery pack, normal belt-clip (M/N: MB-68)
The antenna parallel to the phantom

136.05 MHz W	- 2.390 (4.781) W/Kg
155.05 MHz W	- 0.934 (1.868) W/Kg
173.95 MHz W	- 0.329 (0.659) W/Kg
136.05 MHz N	- 2.542 (5.085) W/Kg
155.05 MHz N	- 0.906 (1.812) W/Kg
173.95 MHz N	- 0.355 (0.711) W/Kg

* The SAR Measurement inside the parenthesis indicates the reading before 50 % duty factor is applied for the half-duplex typ

Test Information

Date : 11/16/00
Time : 6:47:12 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 136.05 W
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.89
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.004

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

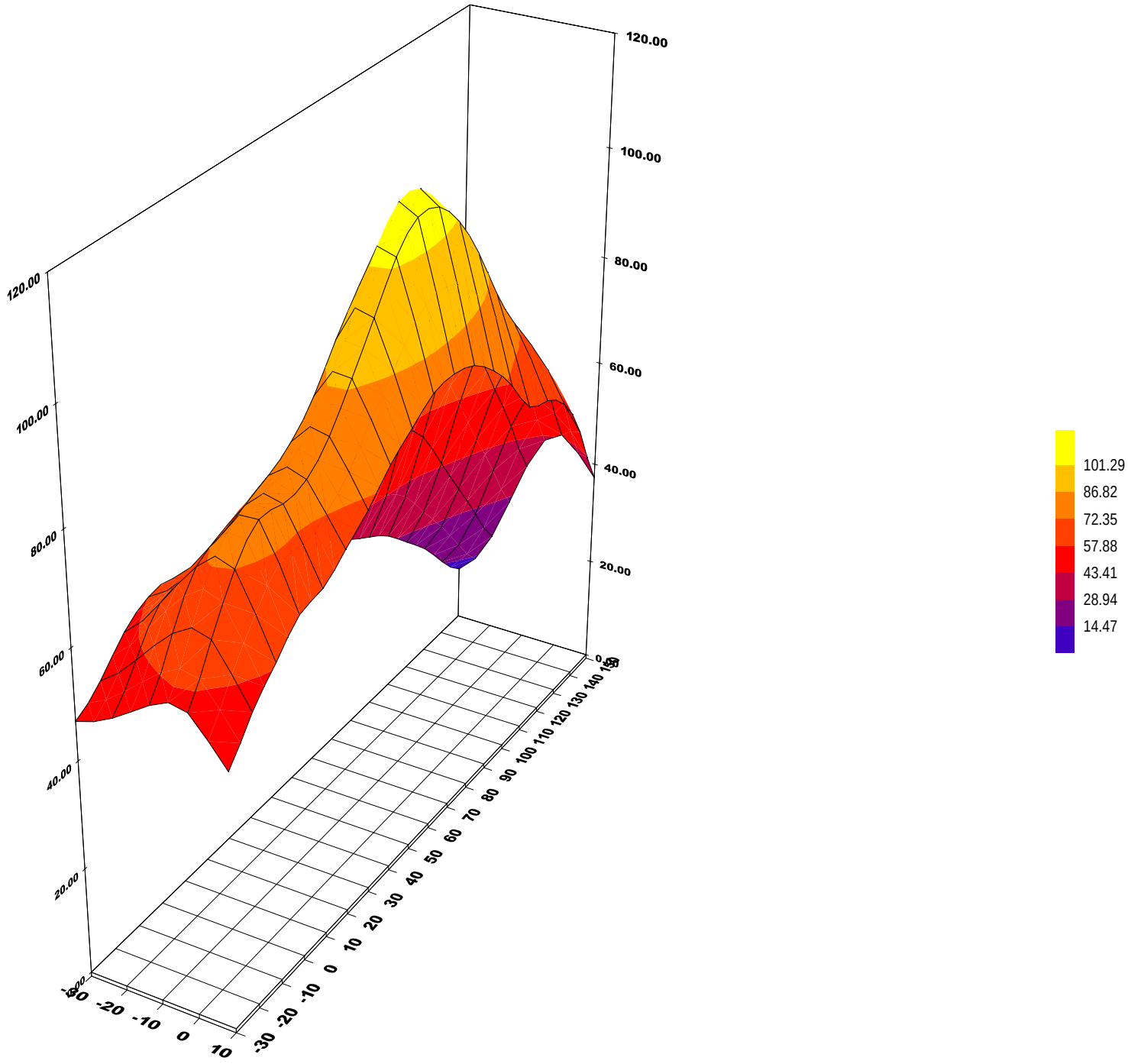
Location of Maximum Field :

X = -5 Y = 70

Measured Values (mV) :

113.939	89.262	72.026	62.853	57.034	52.472
48.502	45.286	42.335	39.701	37.236	

Peak Voltage (mV) : 107.754 **1 Cm Voltage (mV)** : 51.418 **SAR (W/Kg)** : 4.781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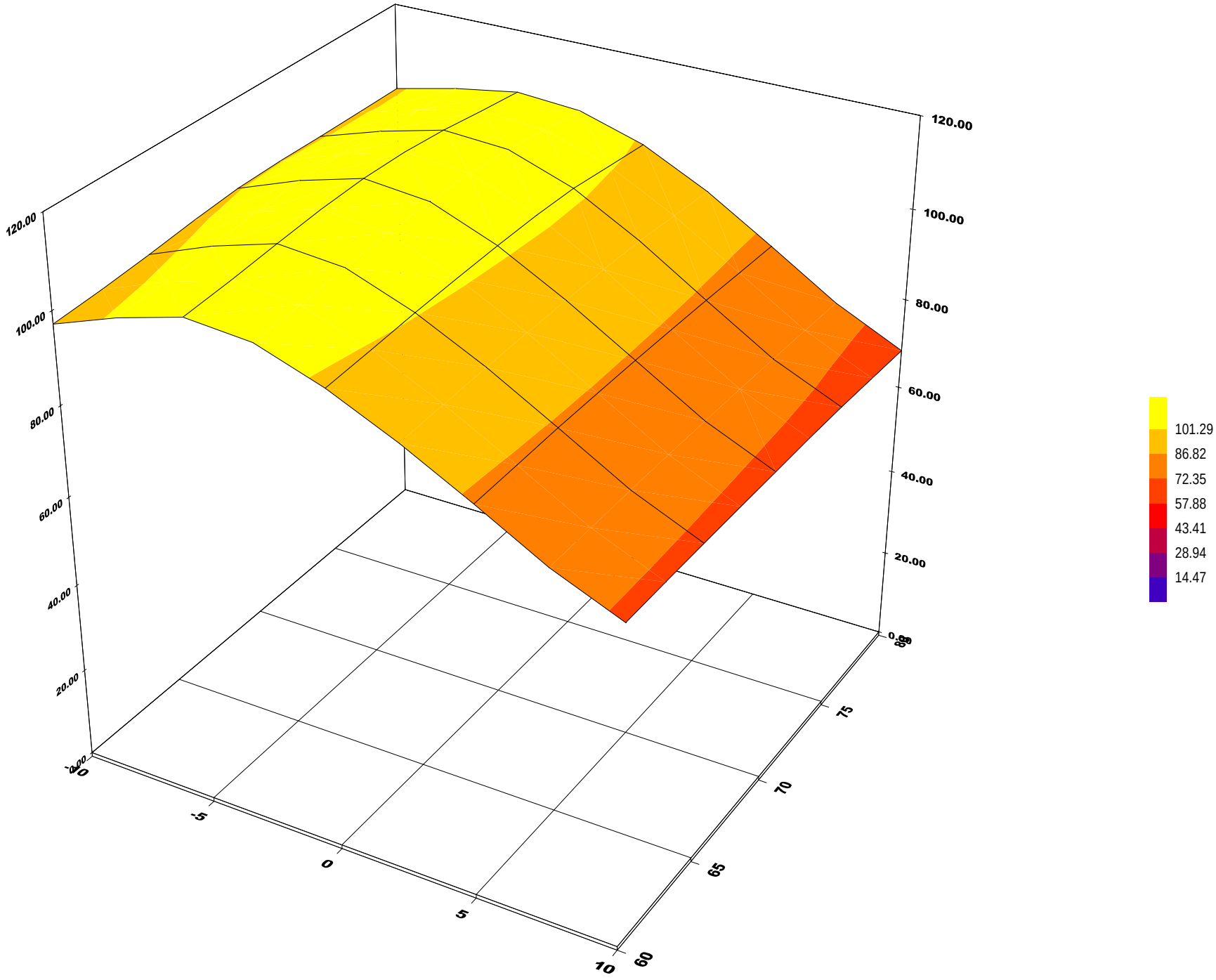
100.00
80.00
60.00
40.00
20.00
120.00
100.00
80.00
60.00
40.00
20.00
-30 -20 -10 0 10
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
101.29
86.82
72.35
57.88
43.41
28.94
14.47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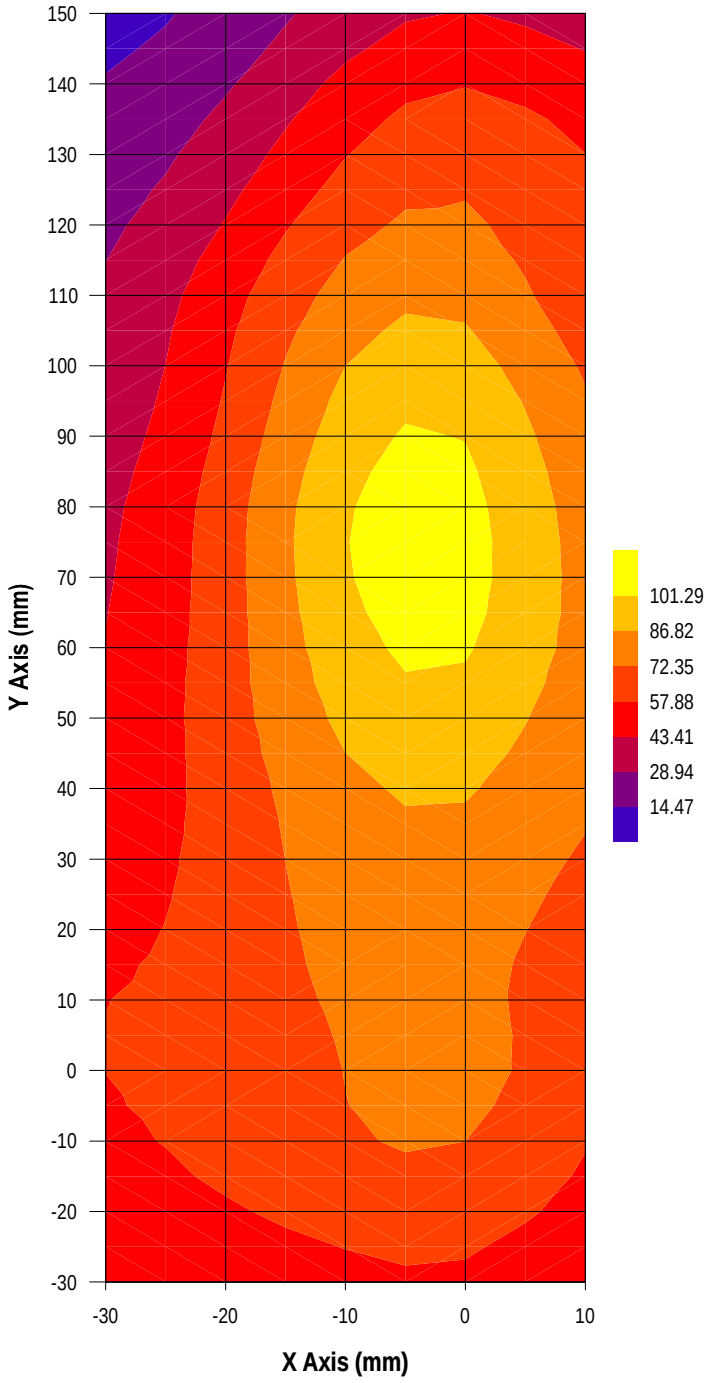
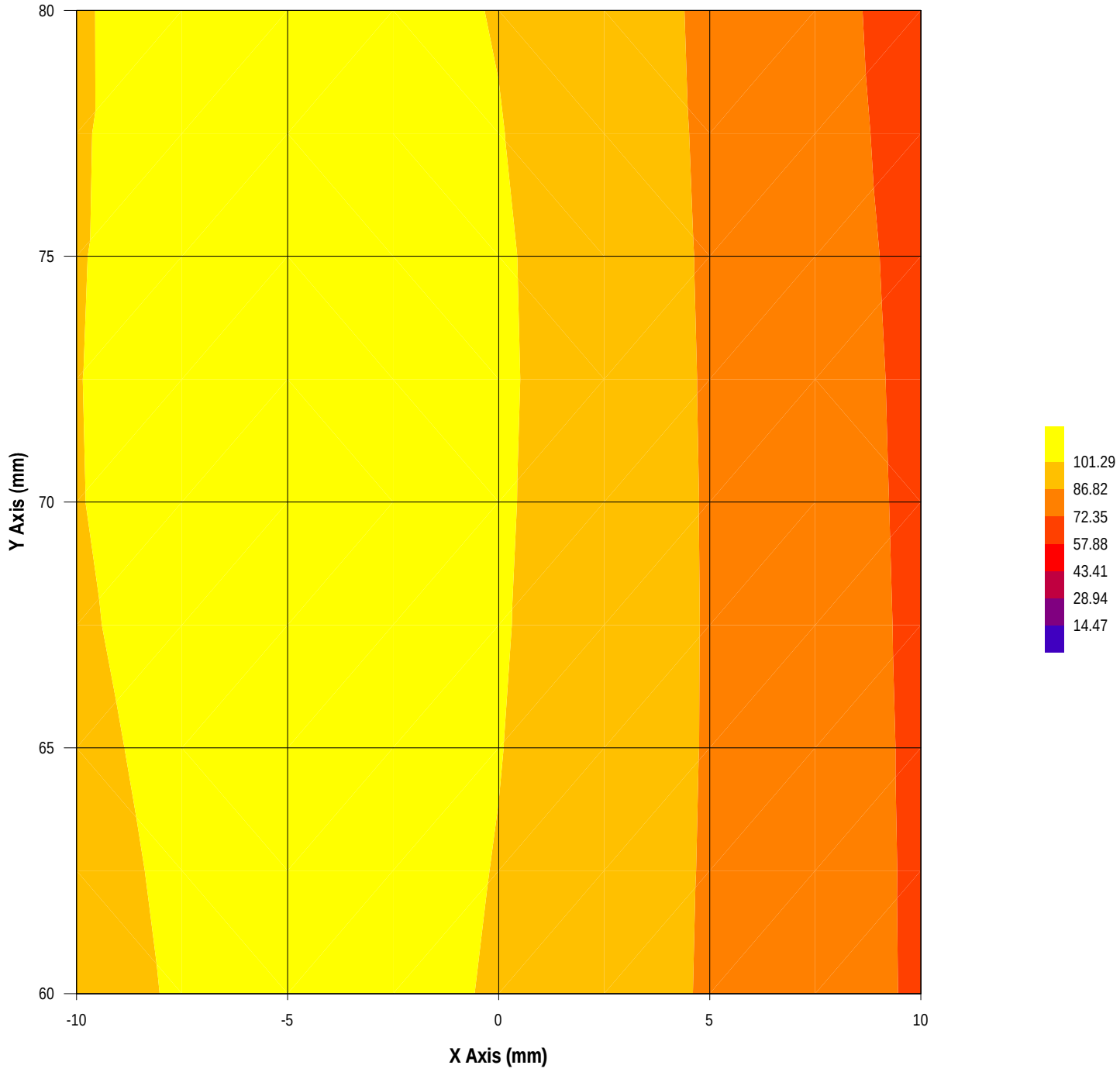
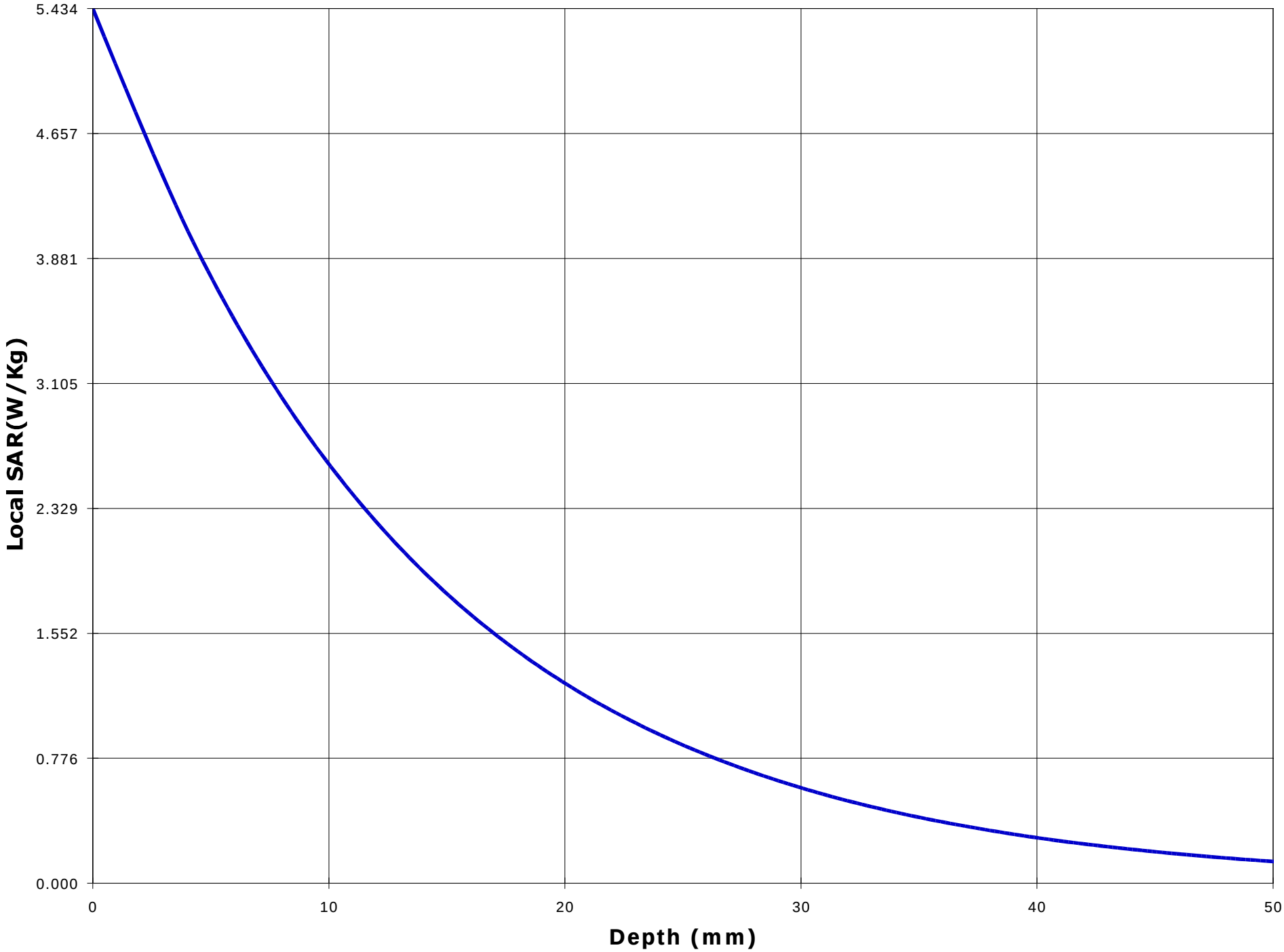
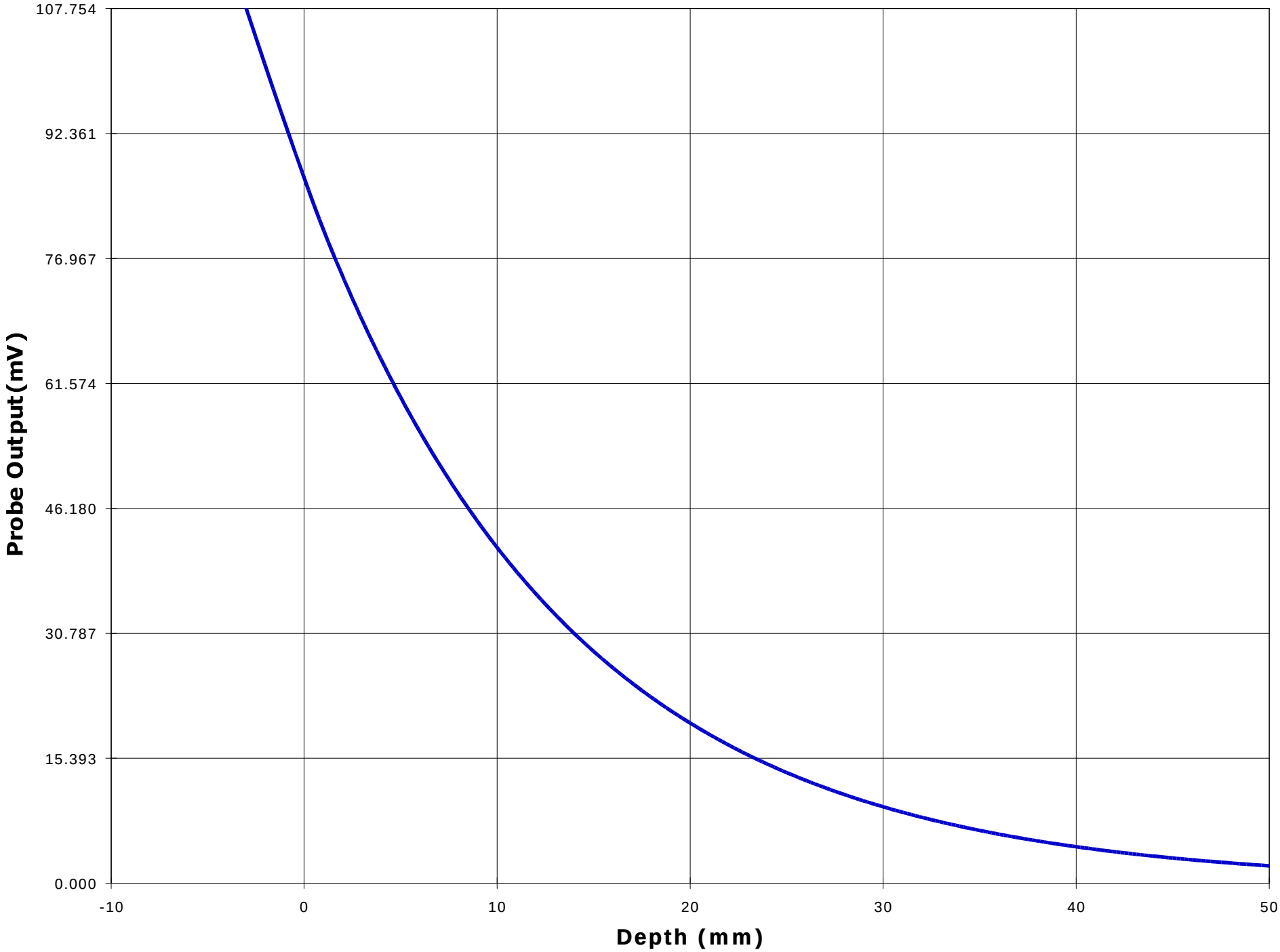
100.00
80.00
60.00
40.00
20.00
0.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
-10
-5
0
5
10
60
65
70
75
80
101.29
86.82
72.35
57.88
43.41
28.94
14.47


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
101.29
86.82
72.35
57.88
43.41
28.94
14.47


80
75
70
65
60
Y Axis (mm)
-10
-5
0
5
10
X Axis (mm)
101.29
86.82
72.35
57.88
43.41
28.94
14.47


5.434
4.657
3.881
3.105
2.329
1.552
0.776
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


107.754
92.361
76.967
61.574
46.180
30.787
15.393
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/16/00
Time : 7:07:02 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 155.05 W
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.78
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 4.891

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

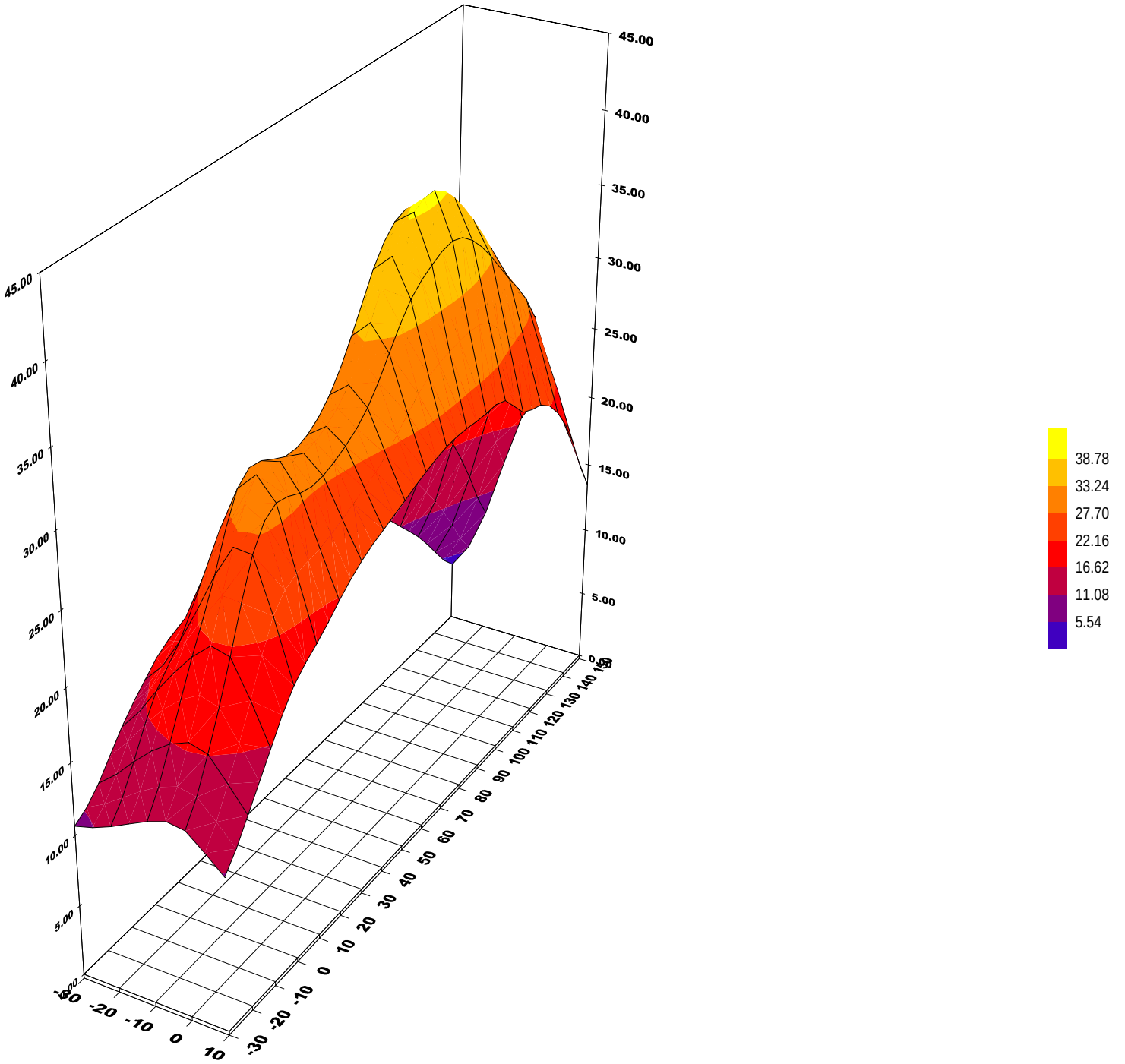
Location of Maximum Field :

X = -5 Y = 85

Measured Values (mV) :

44.510	35.726	28.526	24.665	22.140	20.138
18.445	17.007	15.729	14.613	13.585	

Peak Voltage (mV) : 44.389 **1 Cm Voltage (mV)** : 19.237 **SAR (W/Kg)** : 1.868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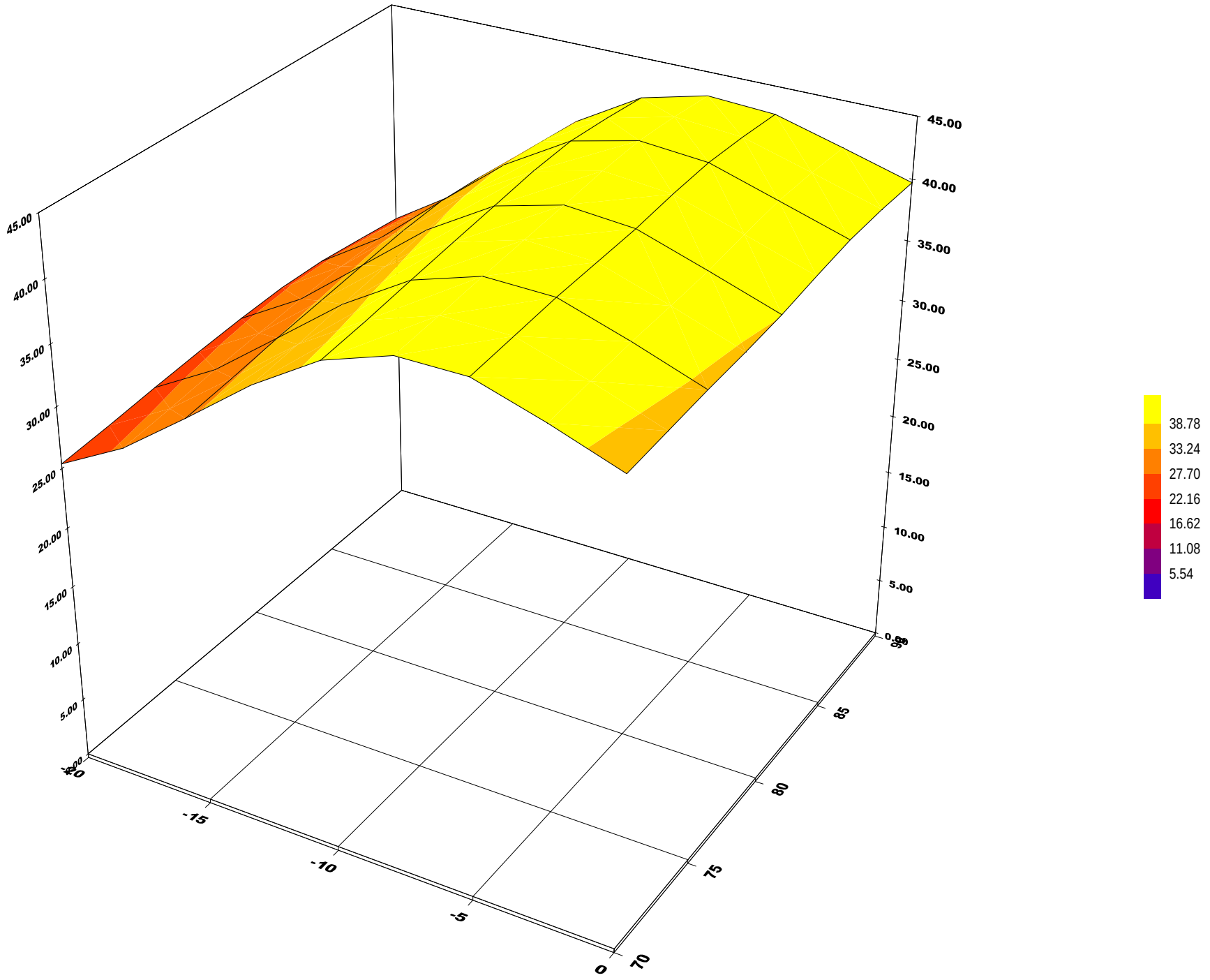
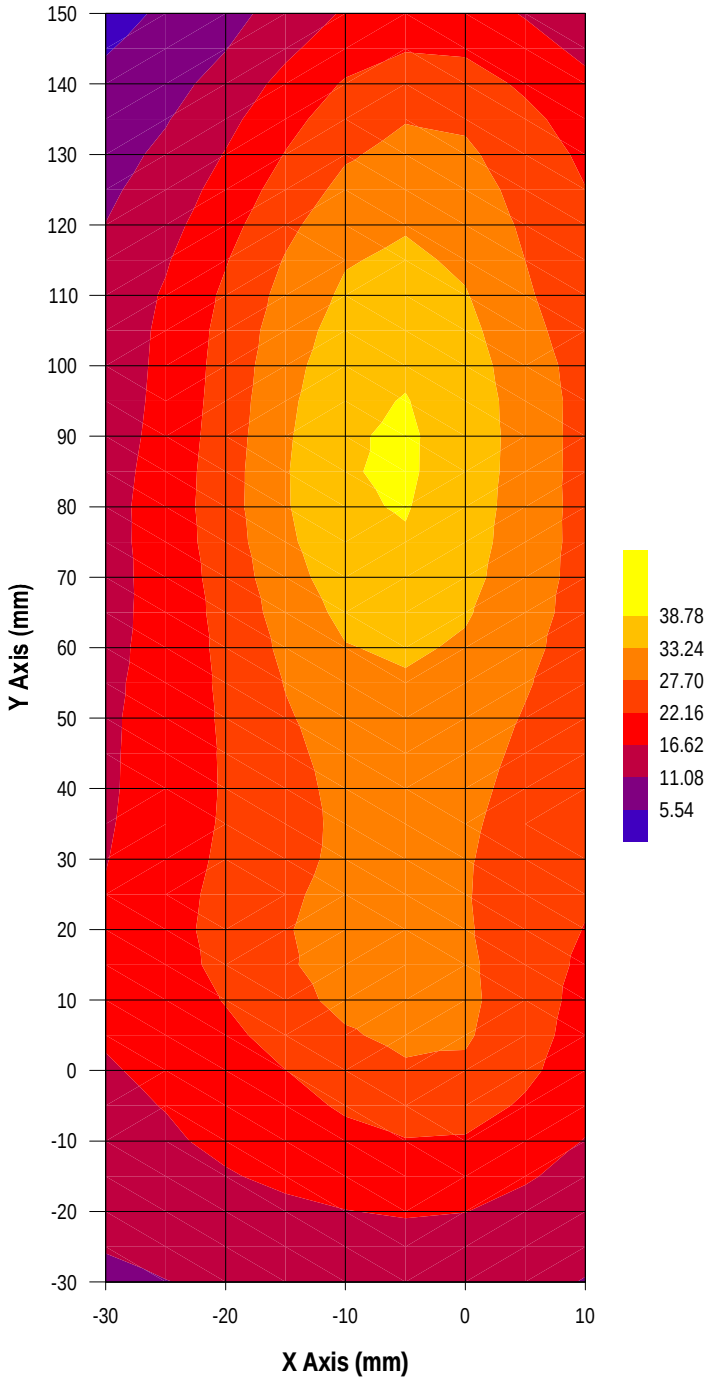
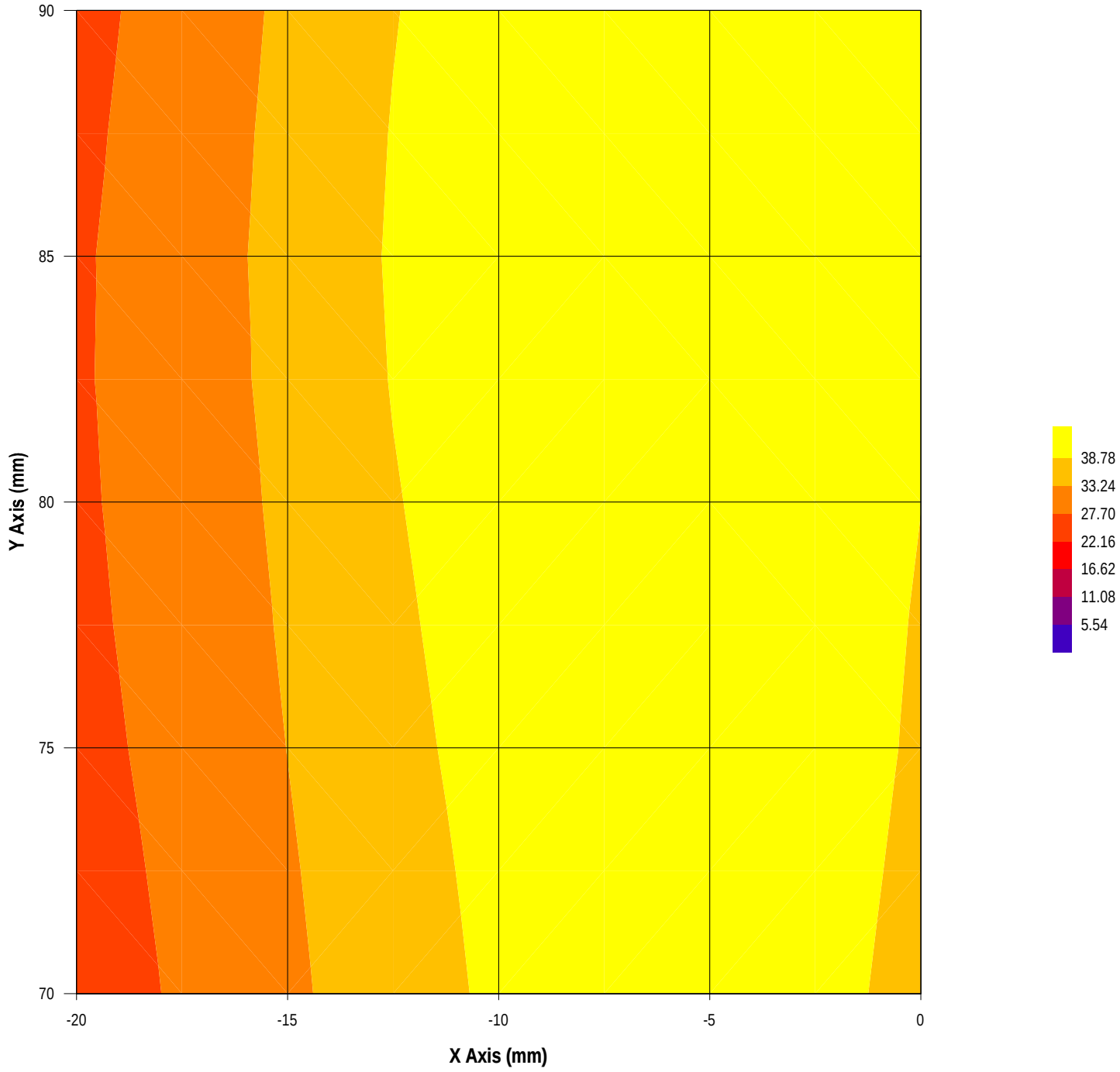
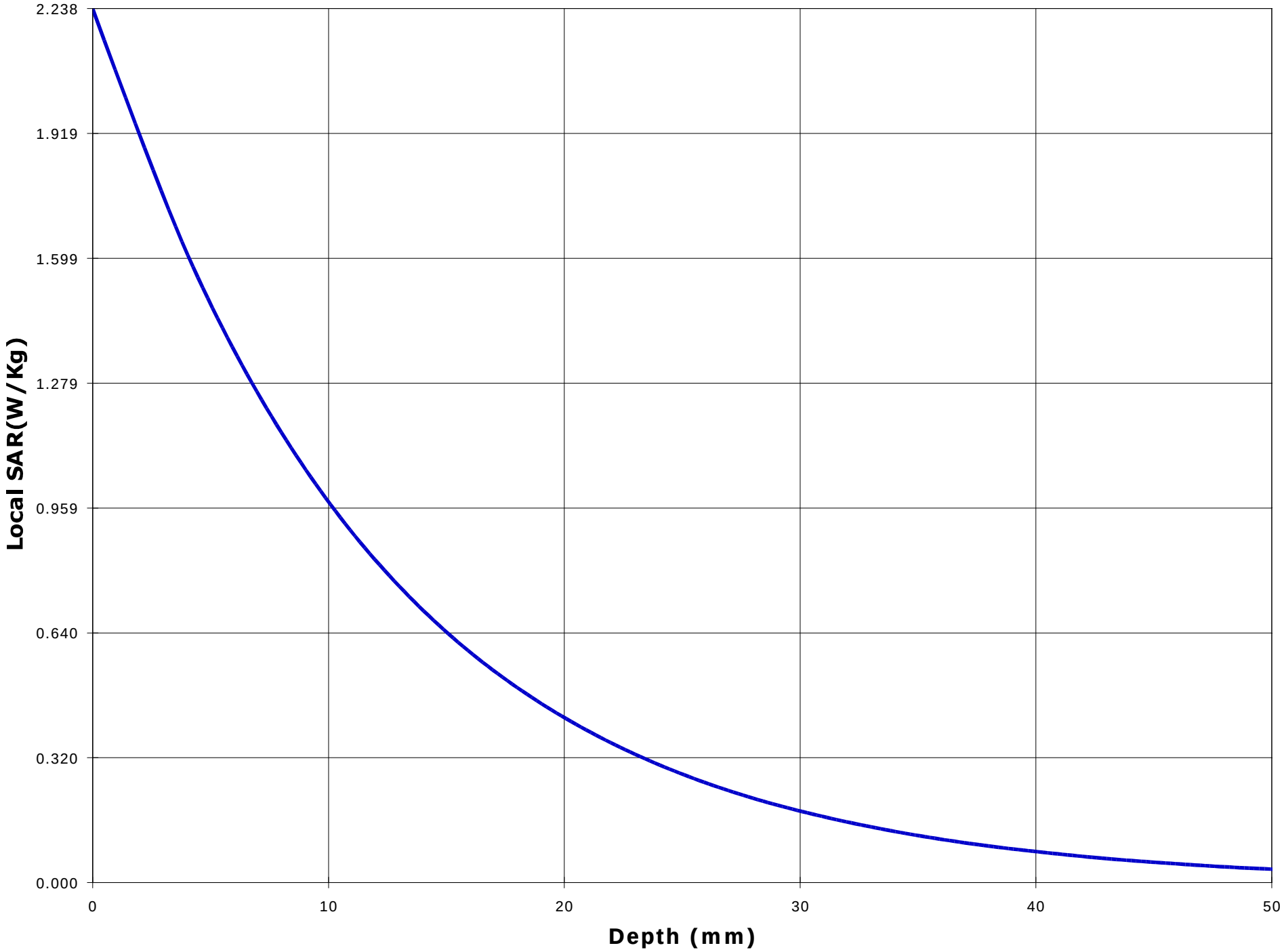
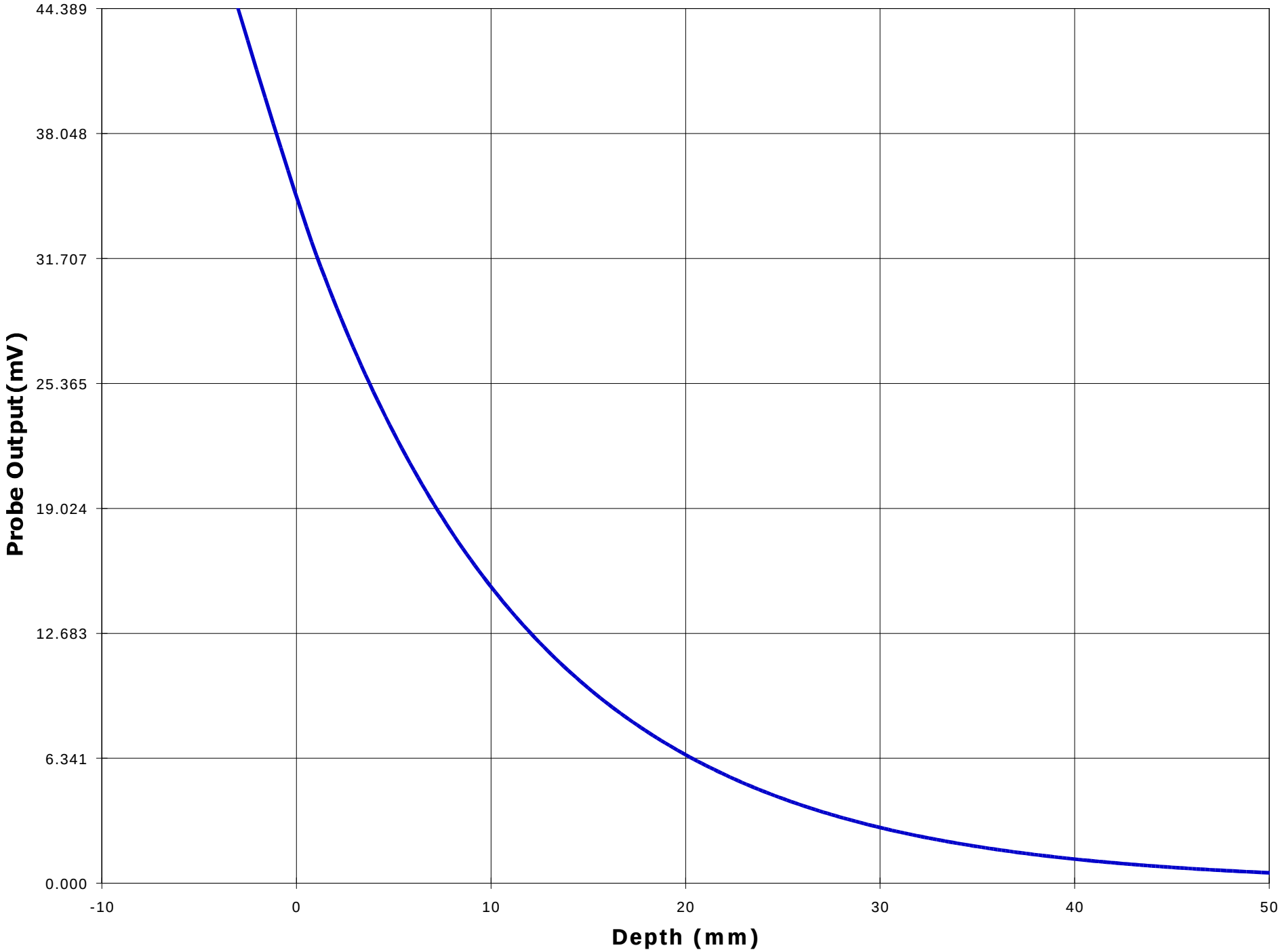
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
-30 -20 -10 0 10
-30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
38.78
33.24
27.70
22.16
16.62
11.08
5.54


45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0
-15
-10
-5
0
70
75
80
85
38.78
33.24
27.70
22.16
16.62
11.08
5.54


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
38.78
33.24
27.70
22.16
16.62
11.08
5.54


90
85
80
75
70
Y Axis (mm)
-20
-15
-10
-5
0
X Axis (mm)
38.78
33.24
27.70
22.16
16.62
11.08
5.54


2.238
1.919
1.599
1.279
0.959
0.640
0.320
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


44.389
38.048
31.707
25.365
19.024
12.683
6.341
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/16/00
Time : 7:26:48 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 173.95 W
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.90
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.014

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

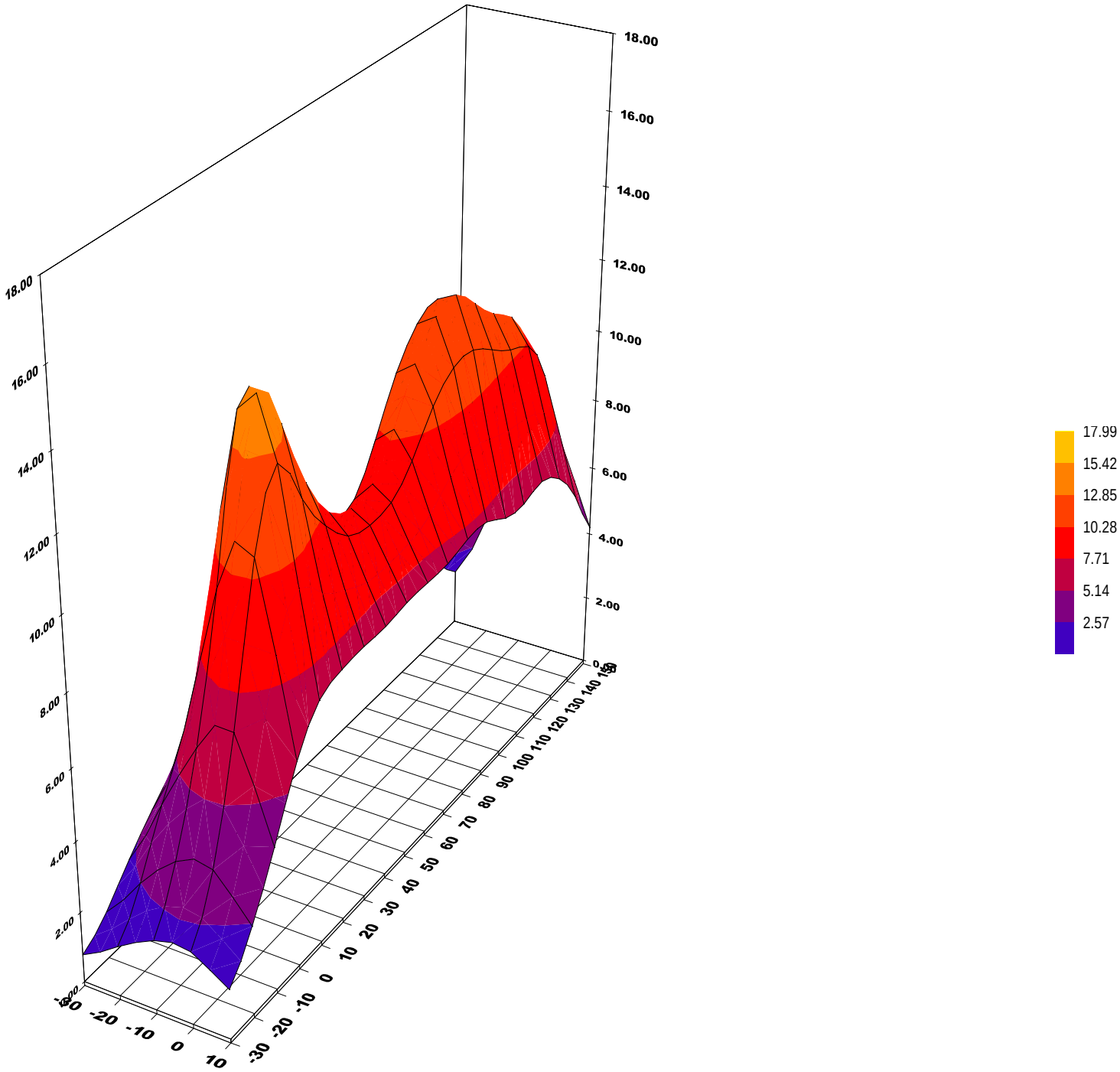
Location of Maximum Field :

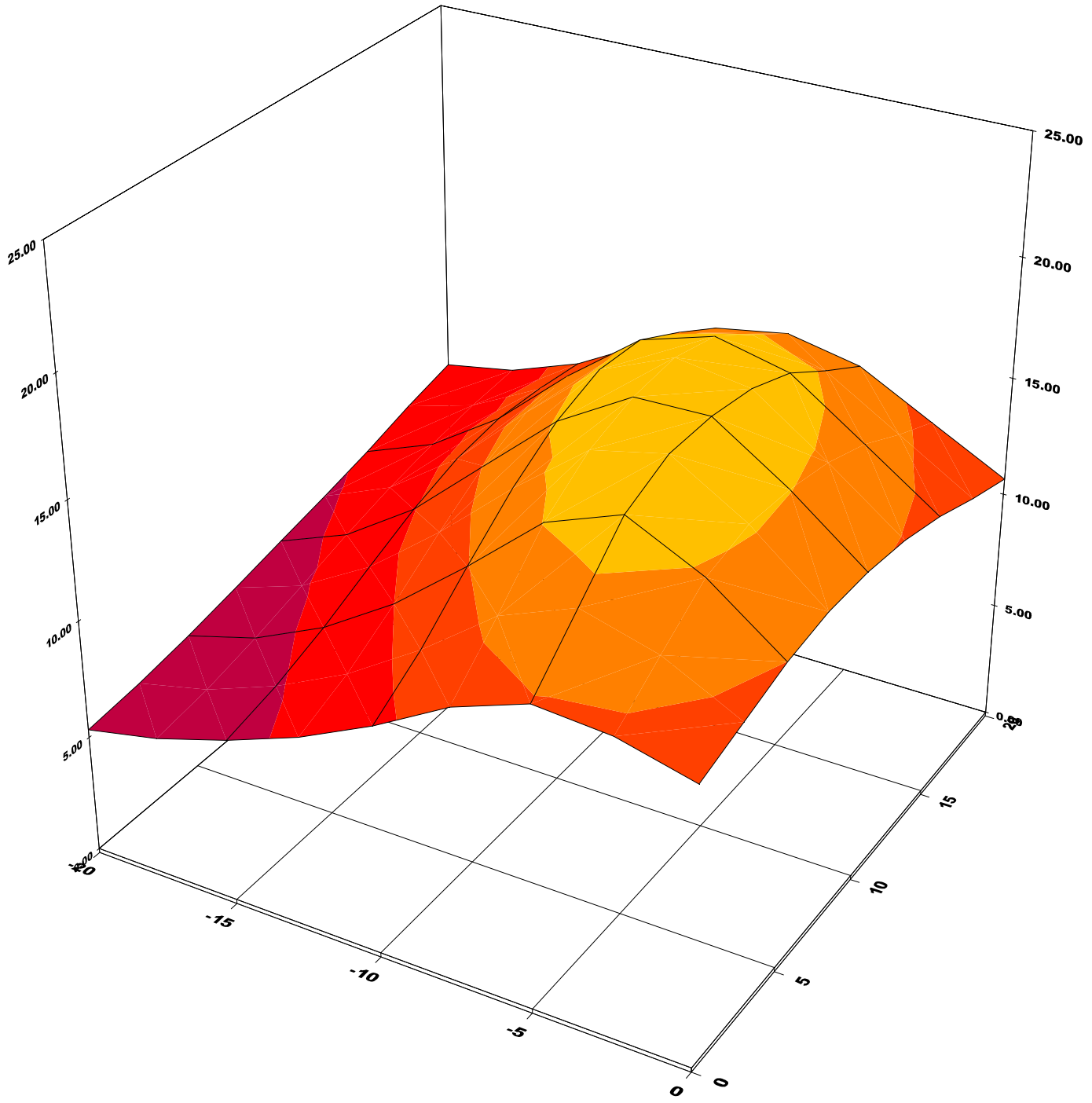
X = -5 Y = 5

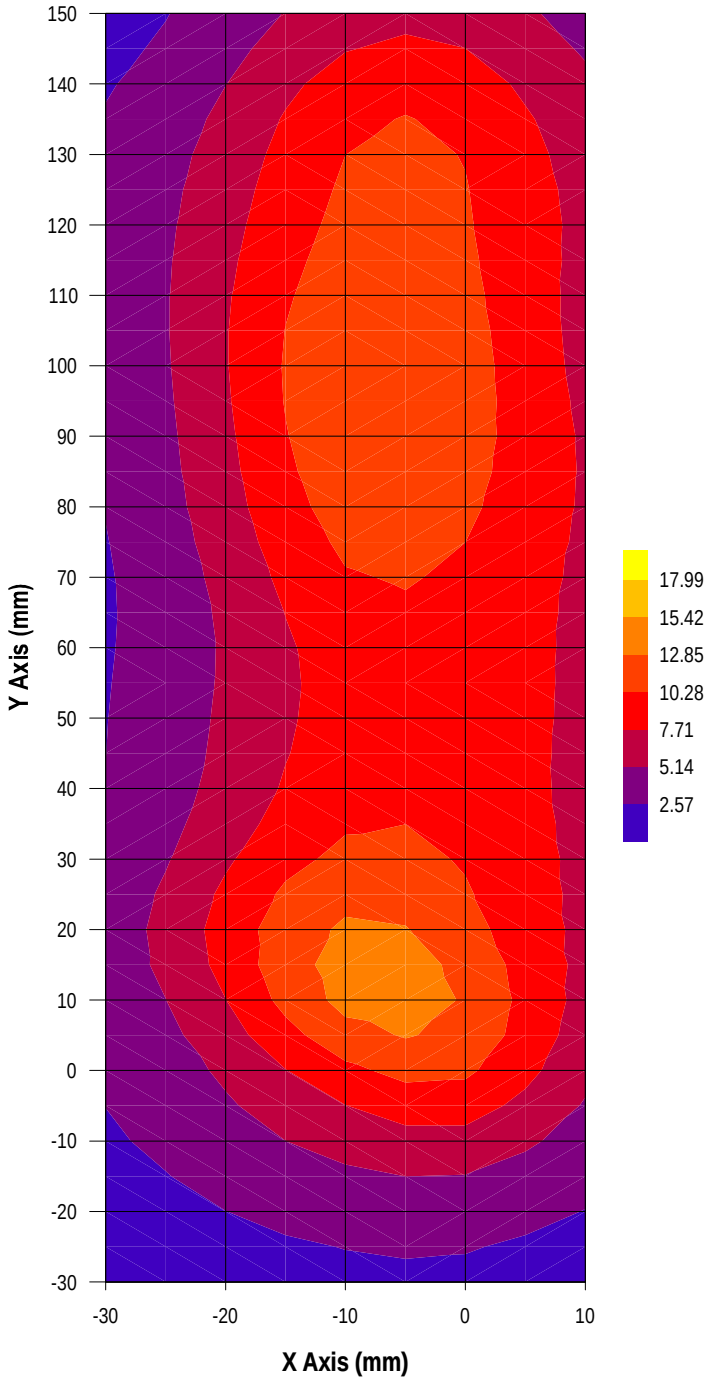
Measured Values (mV) :

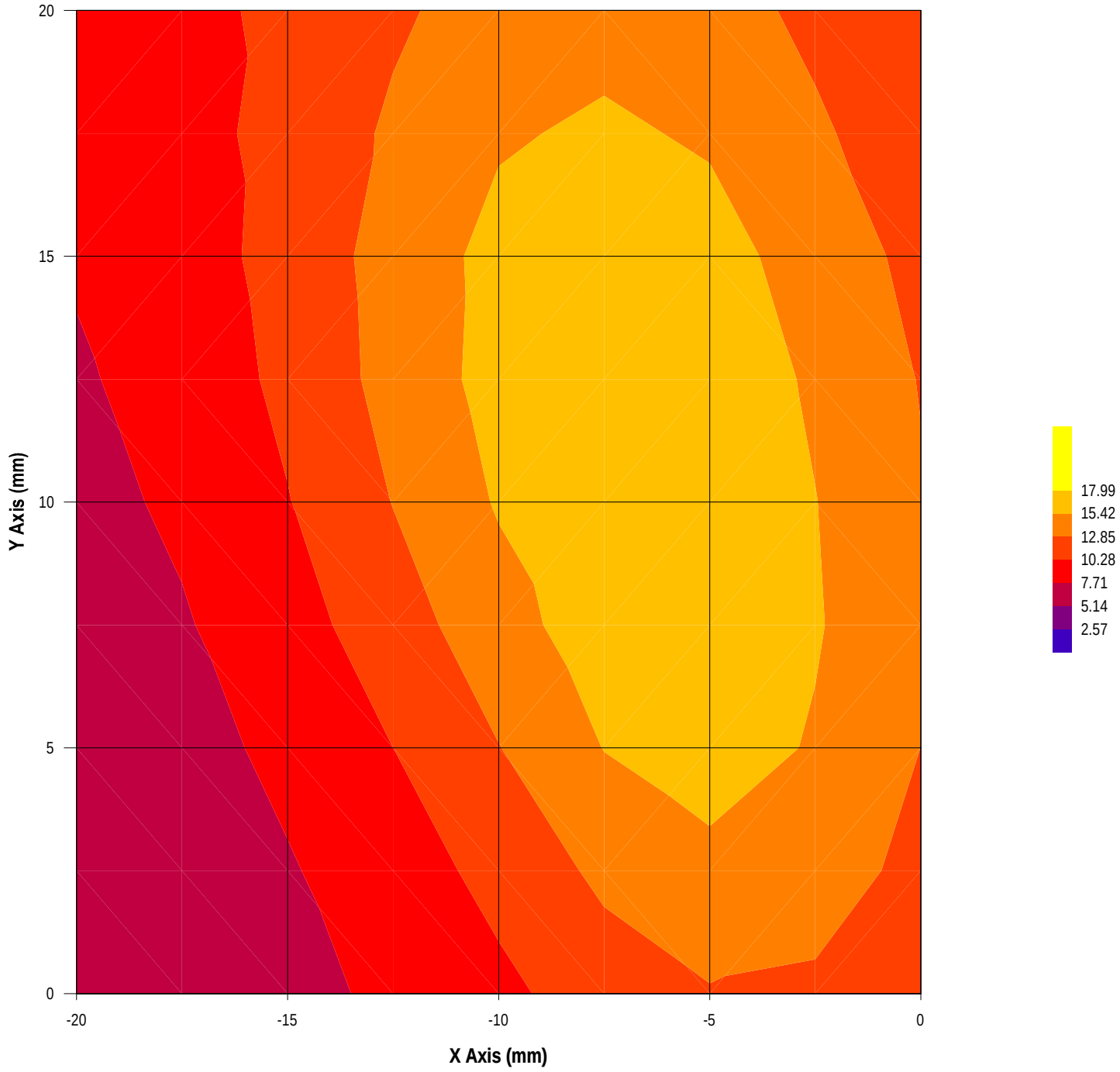
20.069	11.242	6.444	5.055	4.279	3.693
3.219	2.839	2.534	2.255	2.036	

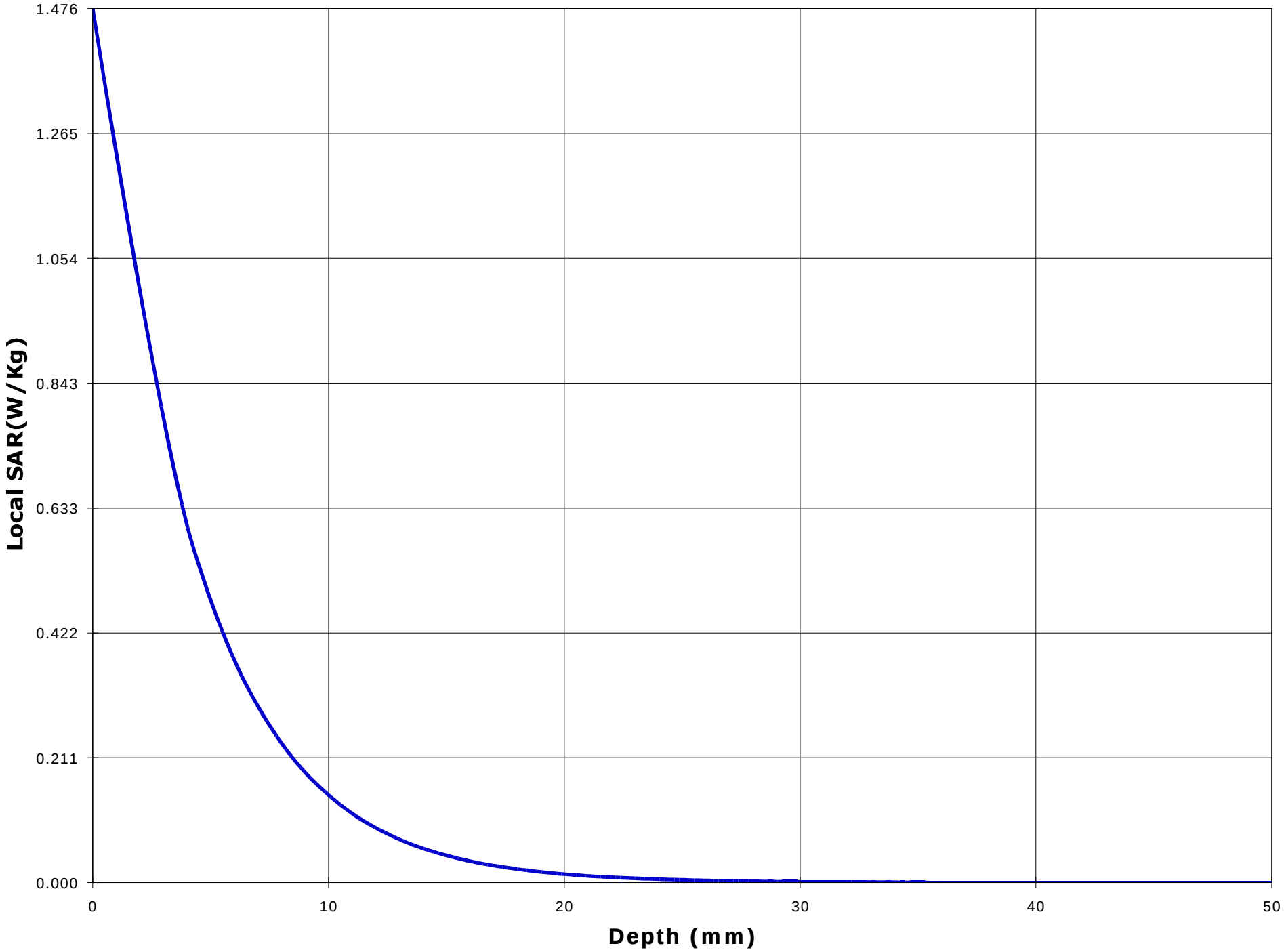
Peak Voltage (mV) : 29.270 **1 Cm Voltage (mV)** : 2.803 **SAR (W/Kg)** : 0.659

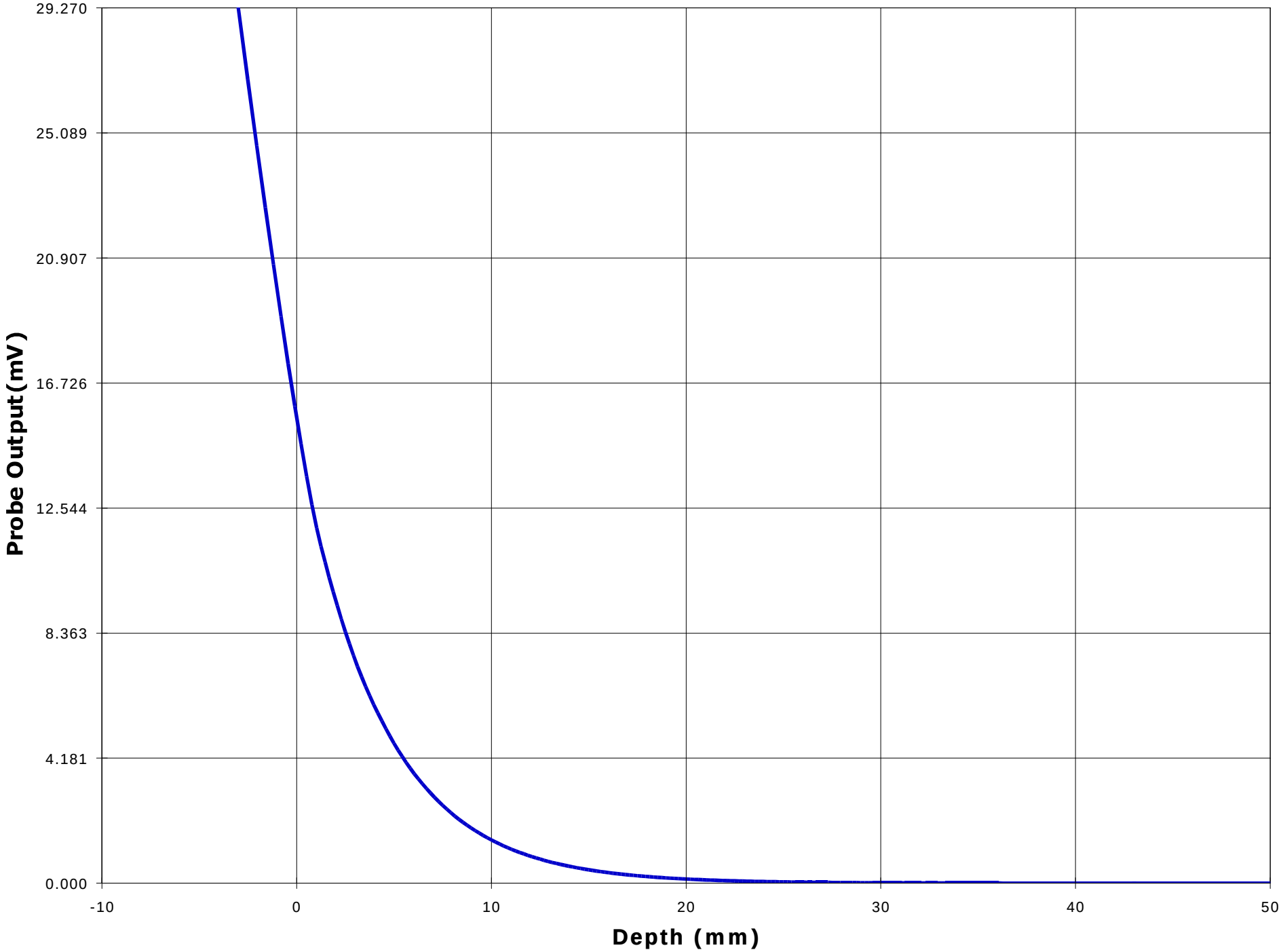

18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
-30 -20 -10 0 10
-30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
17.99
15.42
12.85
10.28
7.71
5.14
2.57


25.00
20.00
15.00
10.00
5.00
-20
-15
-10
-5
0
0
5
10
15
25.00
20.00
15.00
10.00
5.00
17.99
15.42
12.85
10.28
7.71
5.14
2.57


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
17.99
15.42
12.85
10.28
7.71
5.14
2.57


20
15
10
5
0
Y Axis (mm)
-20
-15
-10
-5
0
X Axis (mm)
17.99
15.42
12.85
10.28
7.71
5.14
2.57


1.476
1.265
1.054
0.843
0.633
0.422
0.211
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


29.270
25.089
20.907
16.726
12.544
8.363
4.181
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/16/00
Time : 7:41:13 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 136.05 N
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.94
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.055

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

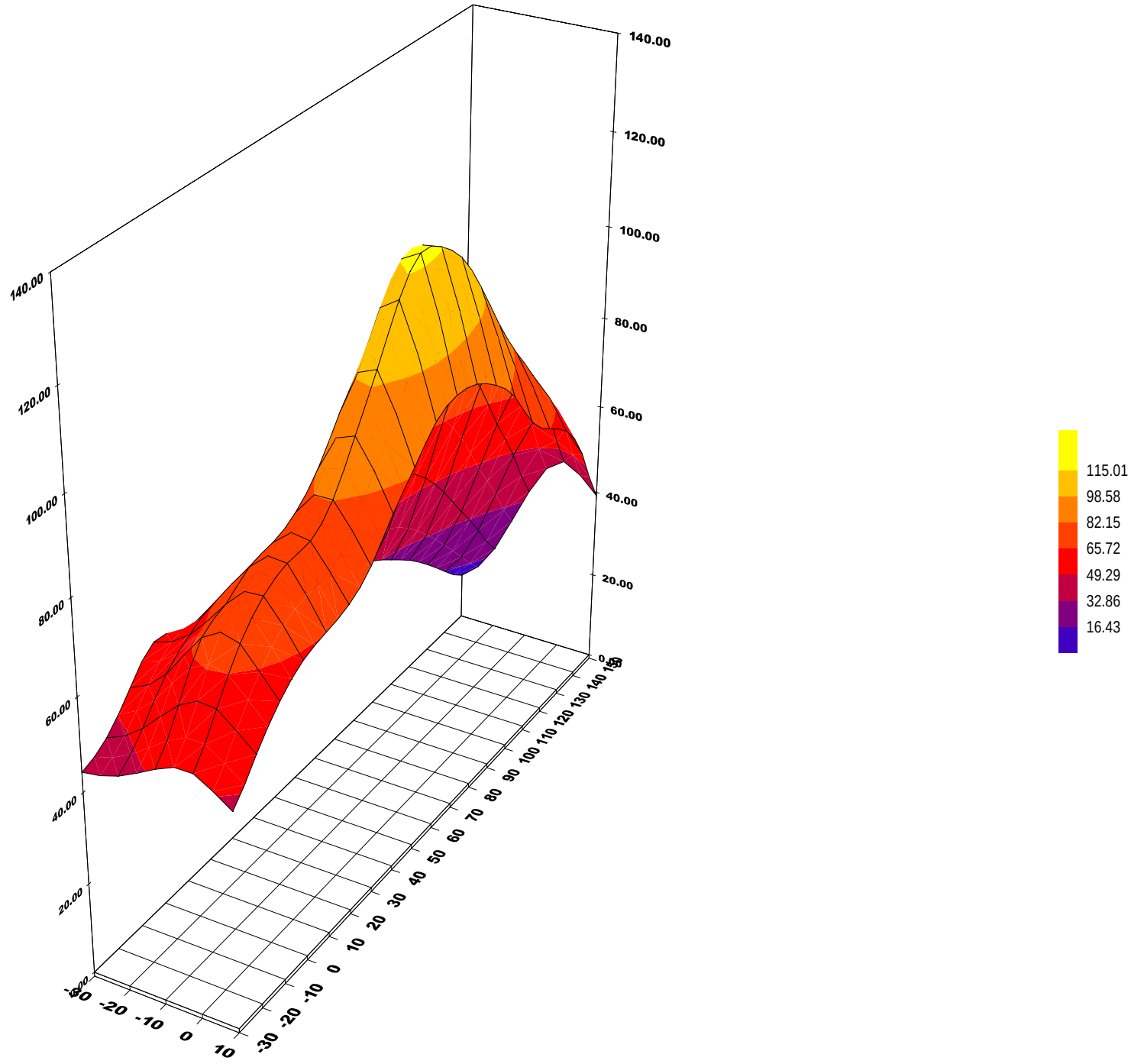
Location of Maximum Field :

X = -5 Y = 70

Measured Values (mV) :

117.162	92.218	72.568	63.550	57.614	52.924
49.027	45.707	42.751	40.299	37.549	

Peak Voltage (mV) : 109.953 **1 Cm Voltage (mV)** : 52.130 **SAR (W/Kg)** : 5.085


140.00
120.00
100.00
80.00
60.00
40.00
20.00
-30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
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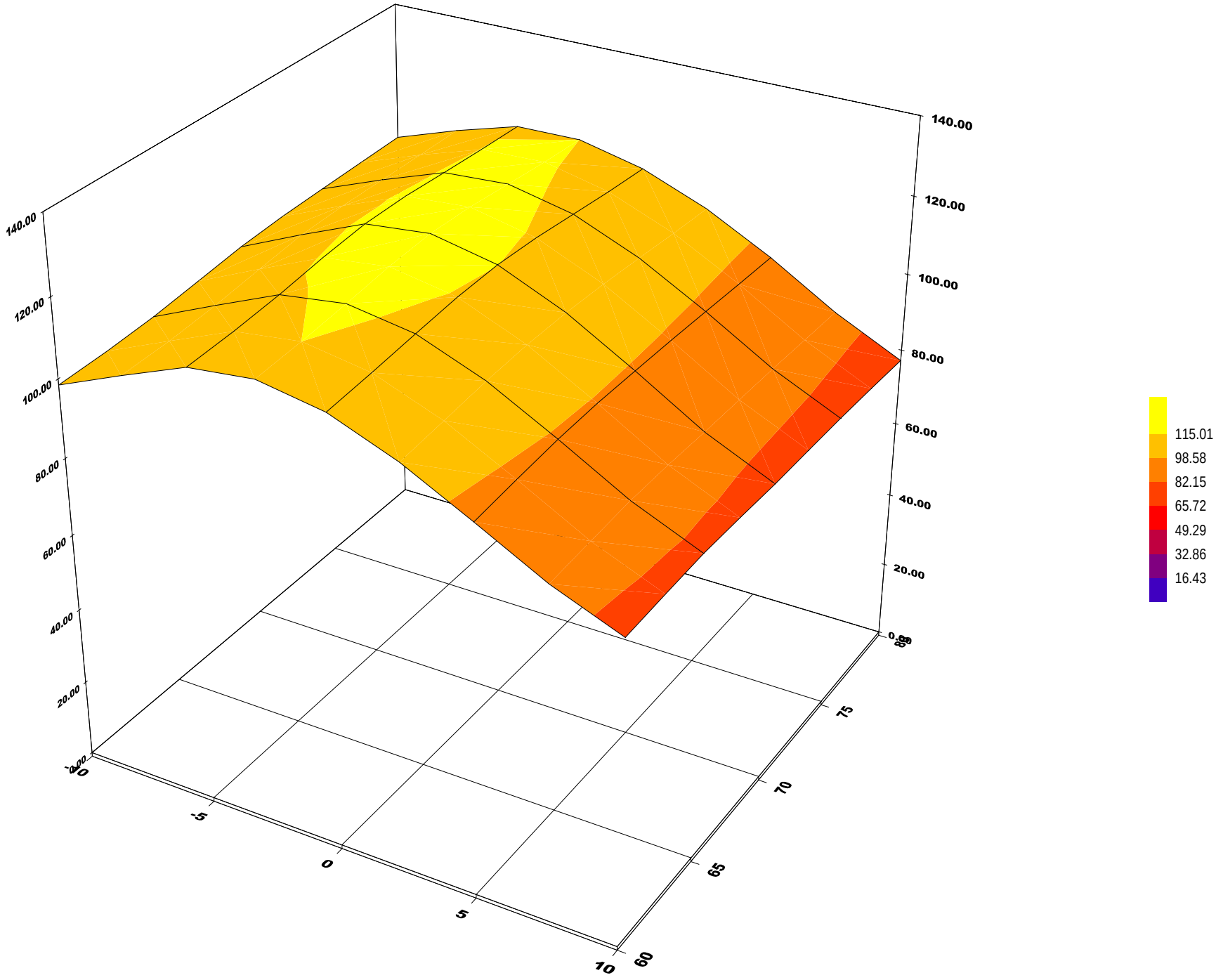
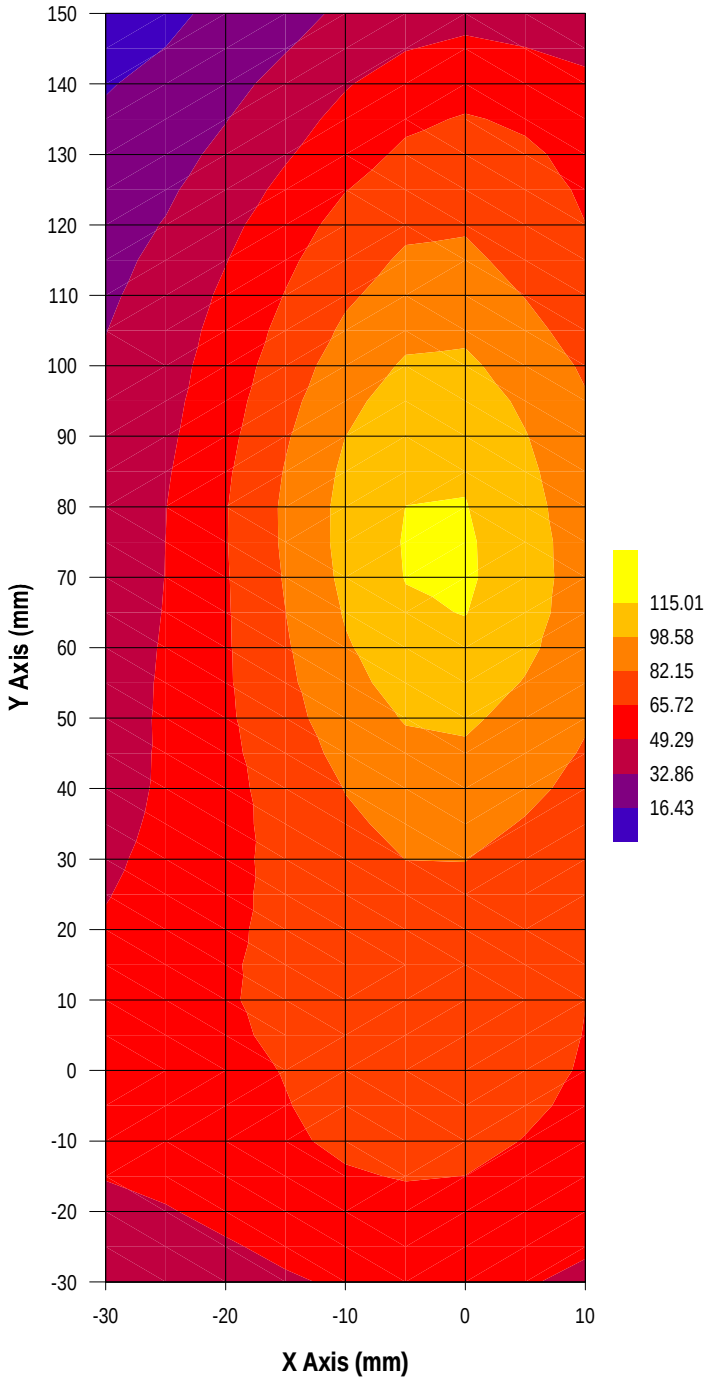
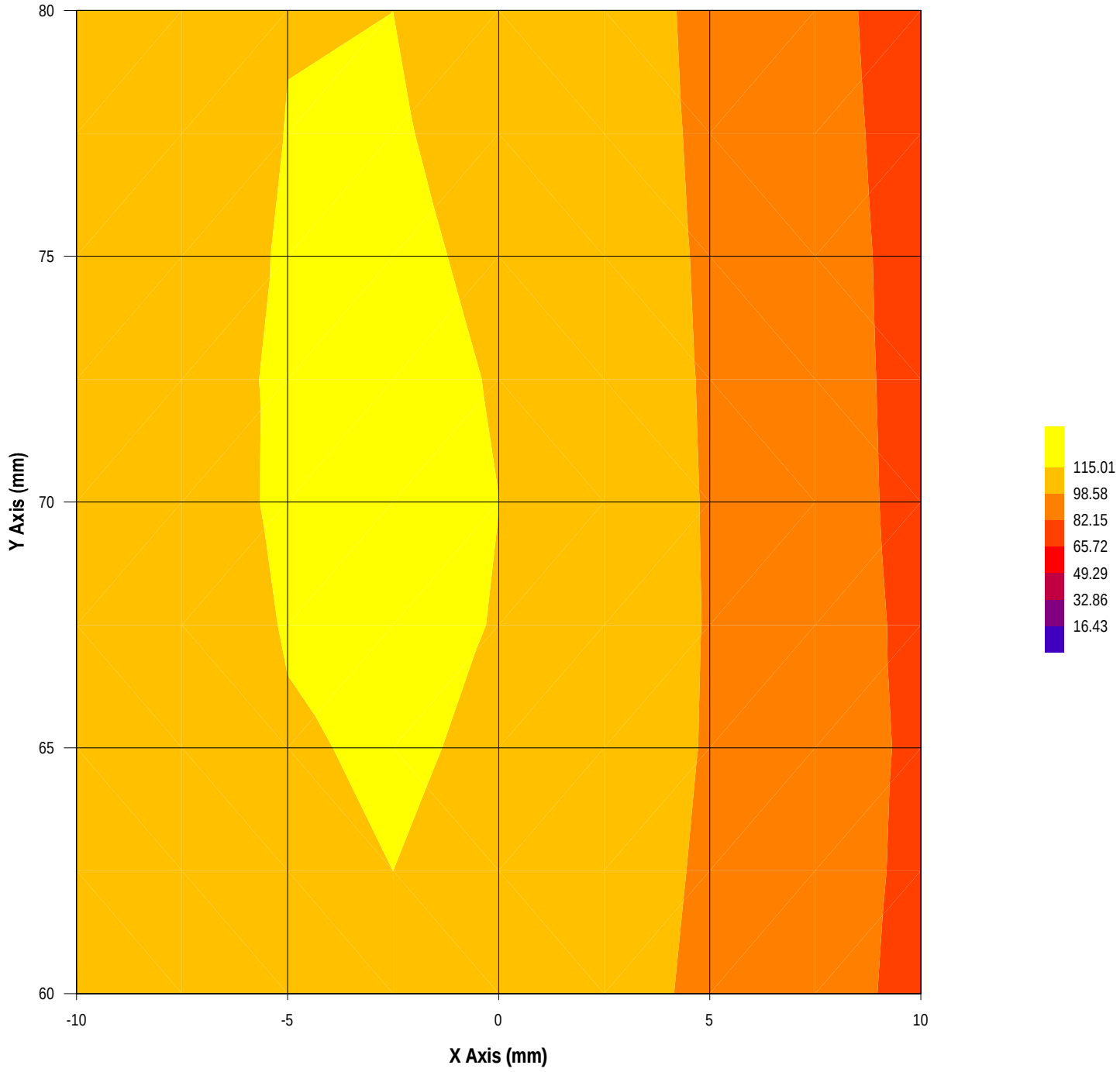
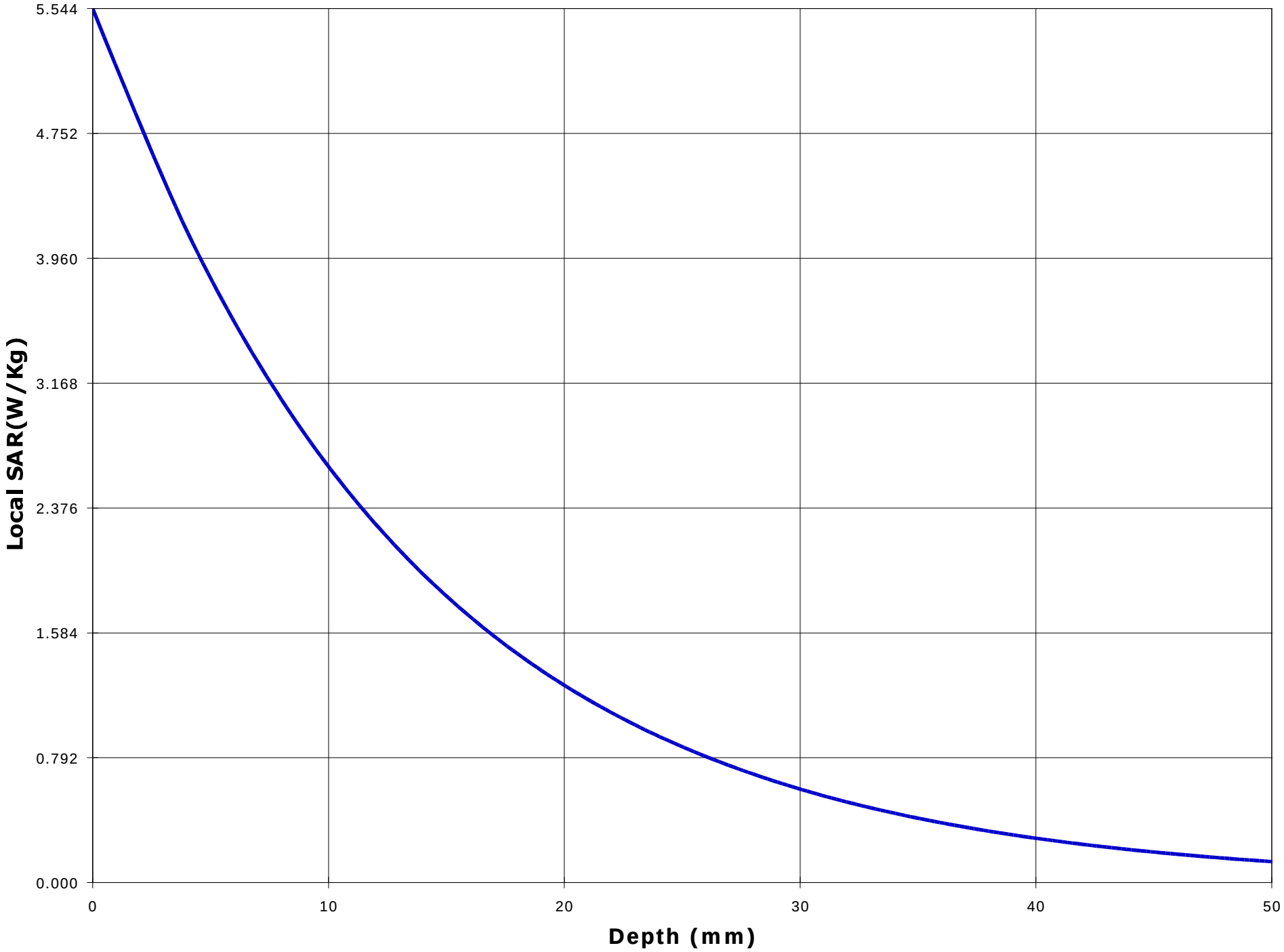
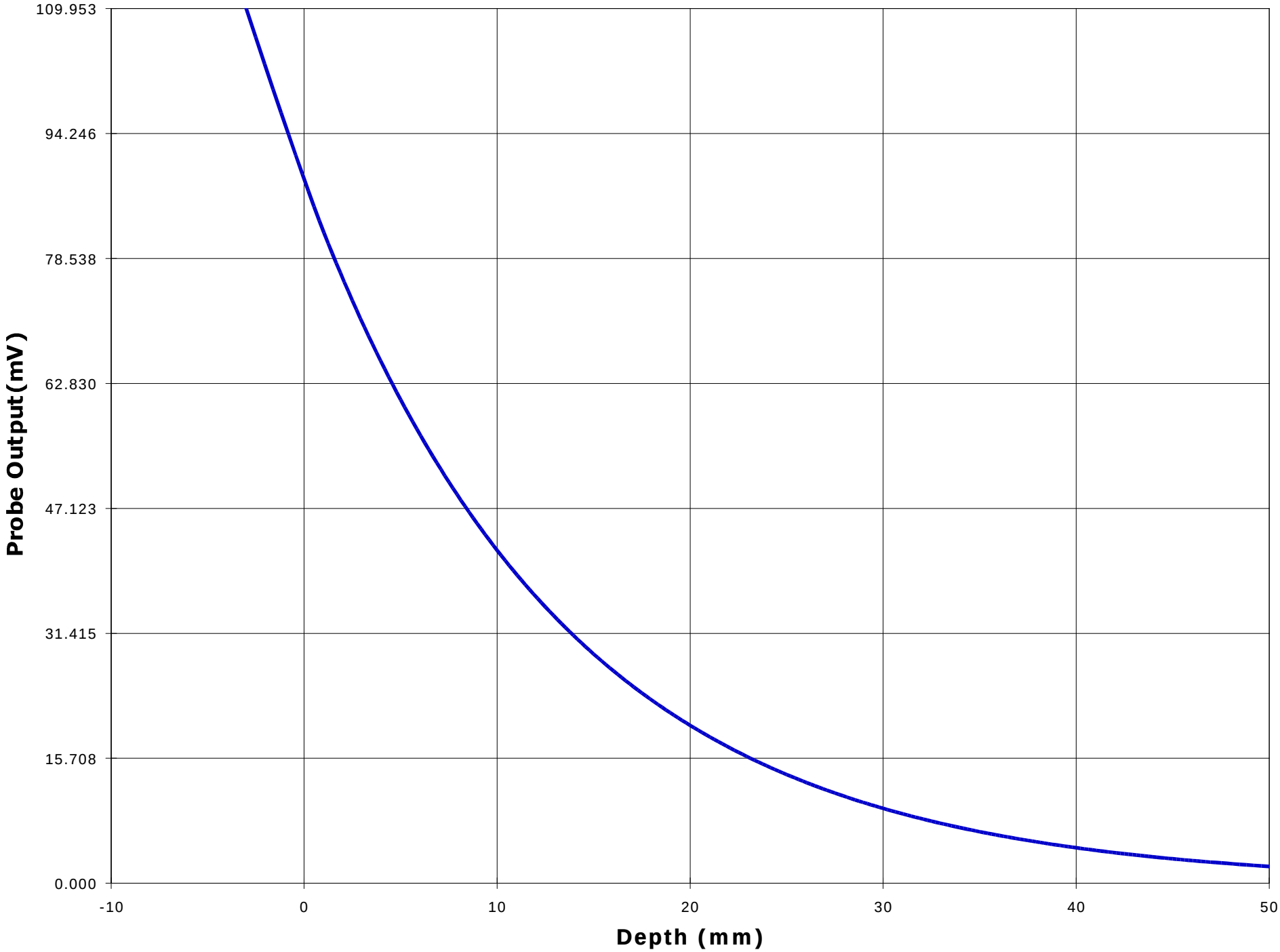
98.58
82.15
65.72
49.29
32.86
16.43


140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
-5
0
5
10
60
65
70
75
80
115.01
98.58
82.15
65.72
49.29
32.86
16.43


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
115.01
98.58
82.15
65.72
49.29
32.86
16.43


80
75
70
65
60
Y Axis (mm)
-10
-5
0
5
10
X Axis (mm)
115.01
98.58
82.15
65.72
49.29
32.86
16.43


5.544
4.752
3.960
3.168
2.376
1.584
0.792
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


109.953
94.246
78.538
62.830
47.123
31.415
15.708
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/16/00
Time : 8:04:05 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 155.05 N
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.80
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 4.912

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

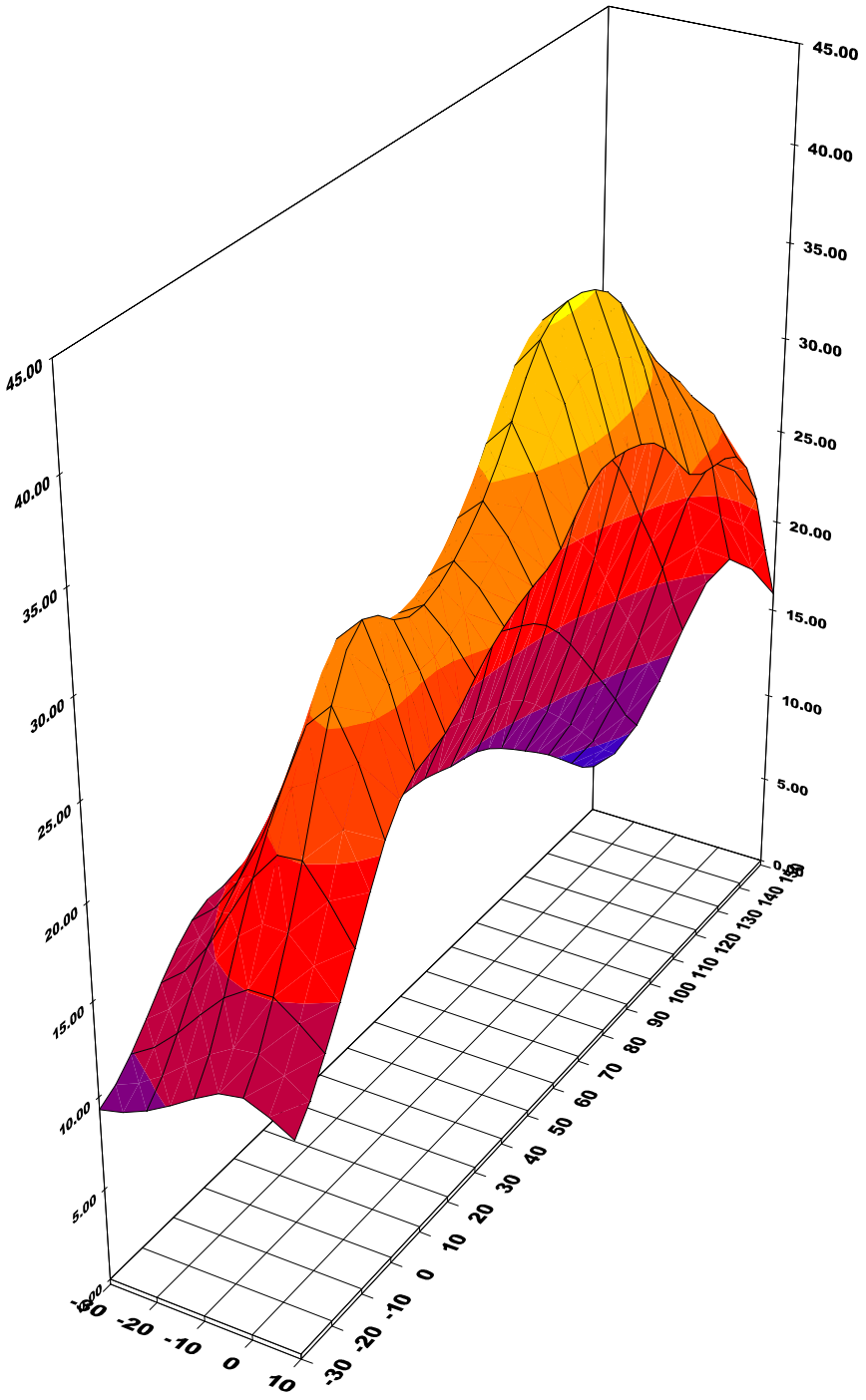
Location of Maximum Field :

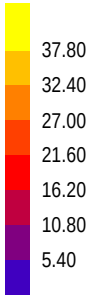
X = -5 Y = 85

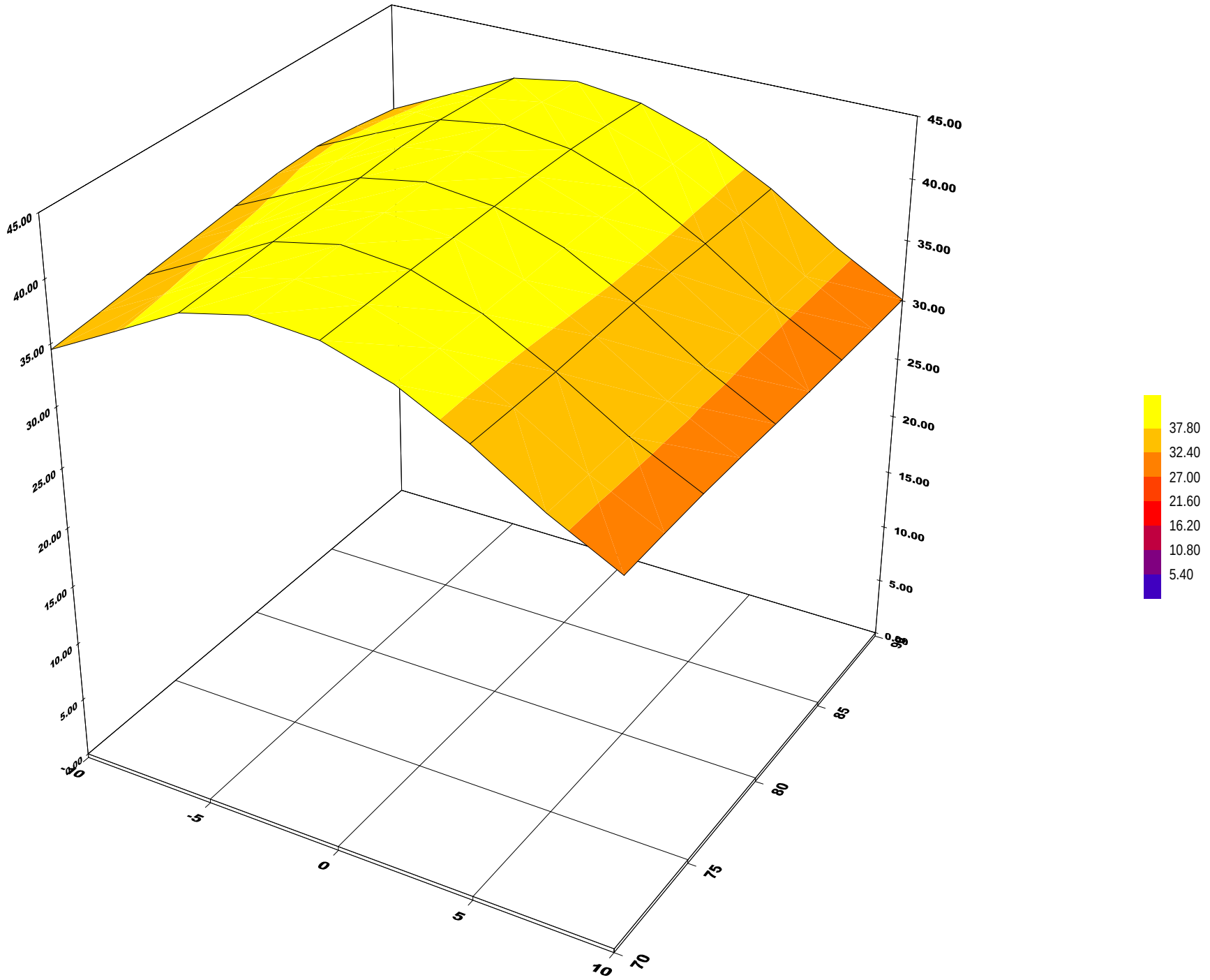
Measured Values (mV) :

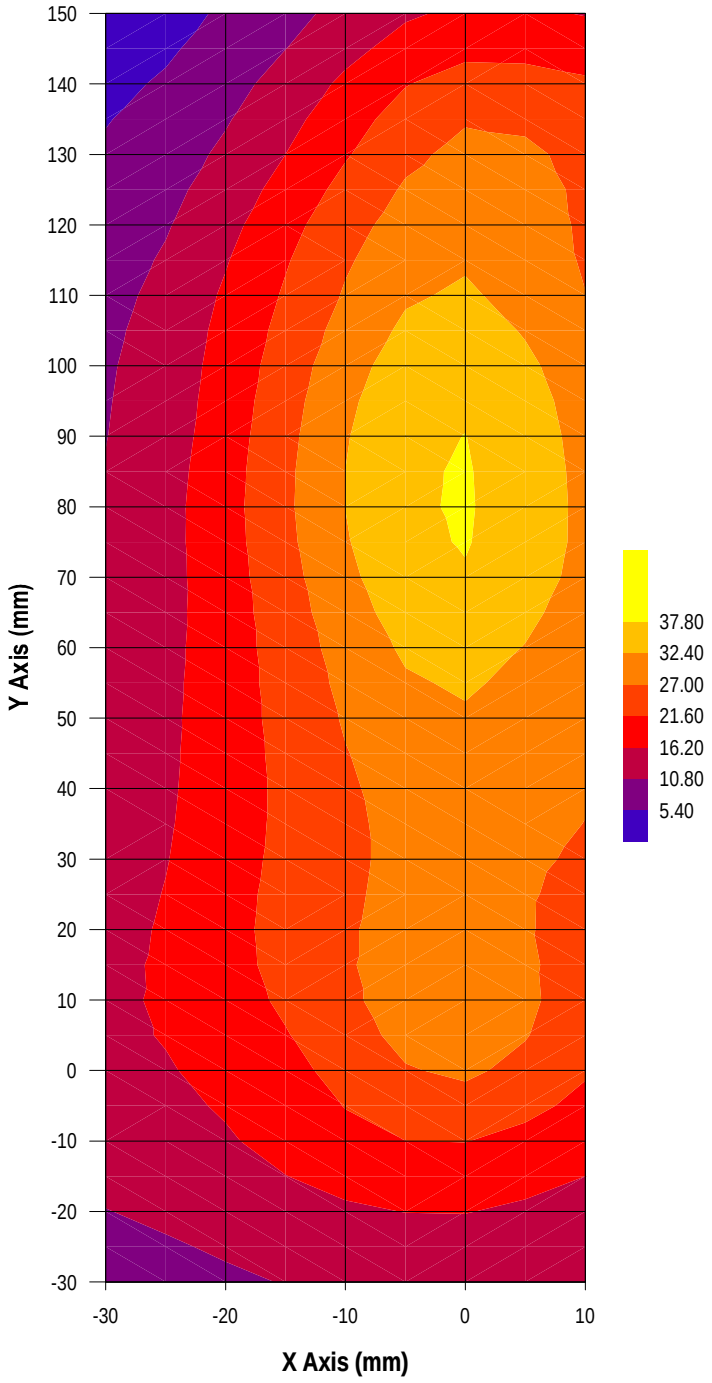
43.389	34.717	27.526	23.694	21.256	19.372
17.812	16.452	15.219	14.151	13.065	

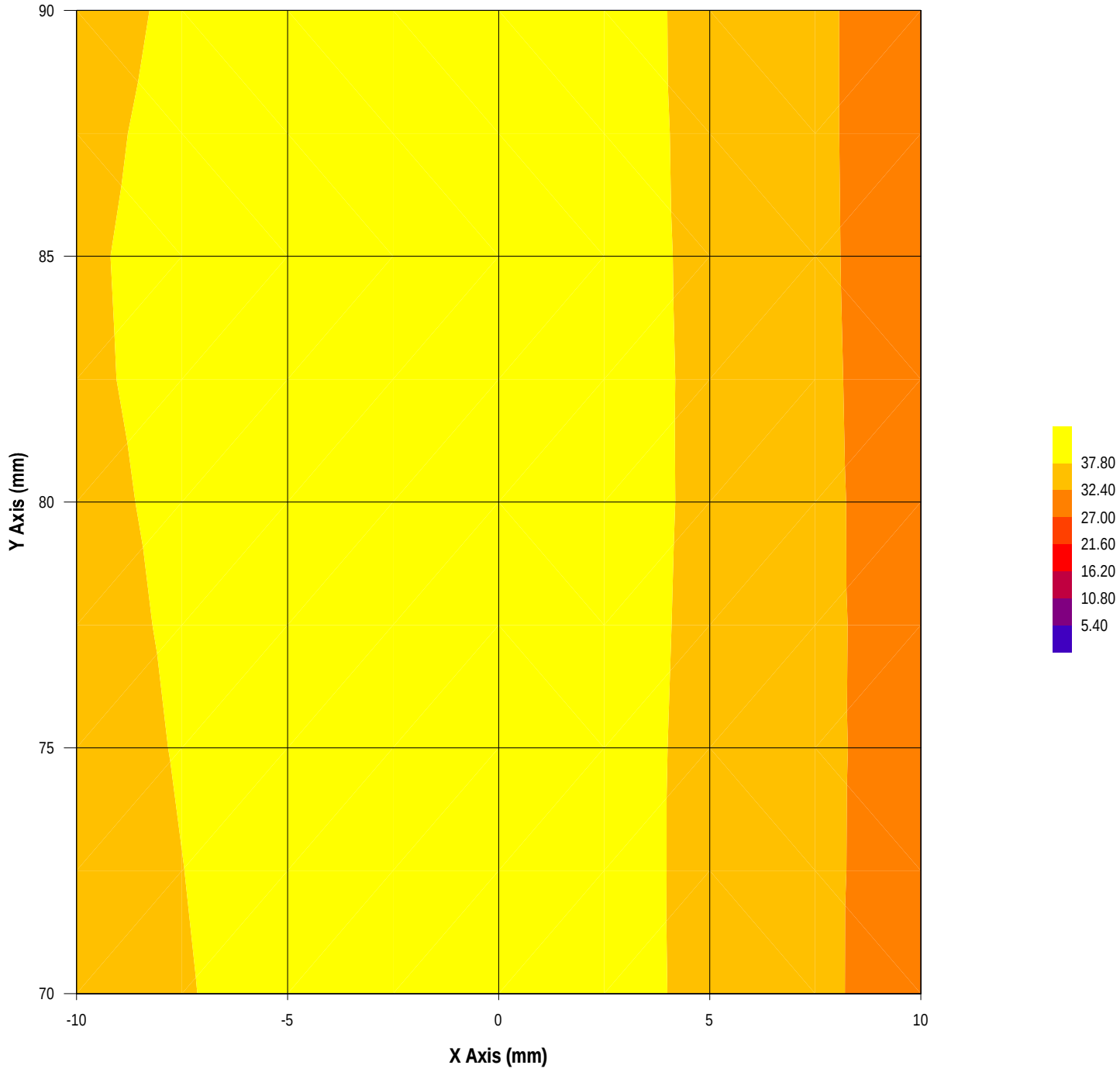
Peak Voltage (mV) : 43.064 **1 Cm Voltage (mV)** : 18.574 **SAR (W/Kg)** : 1.812

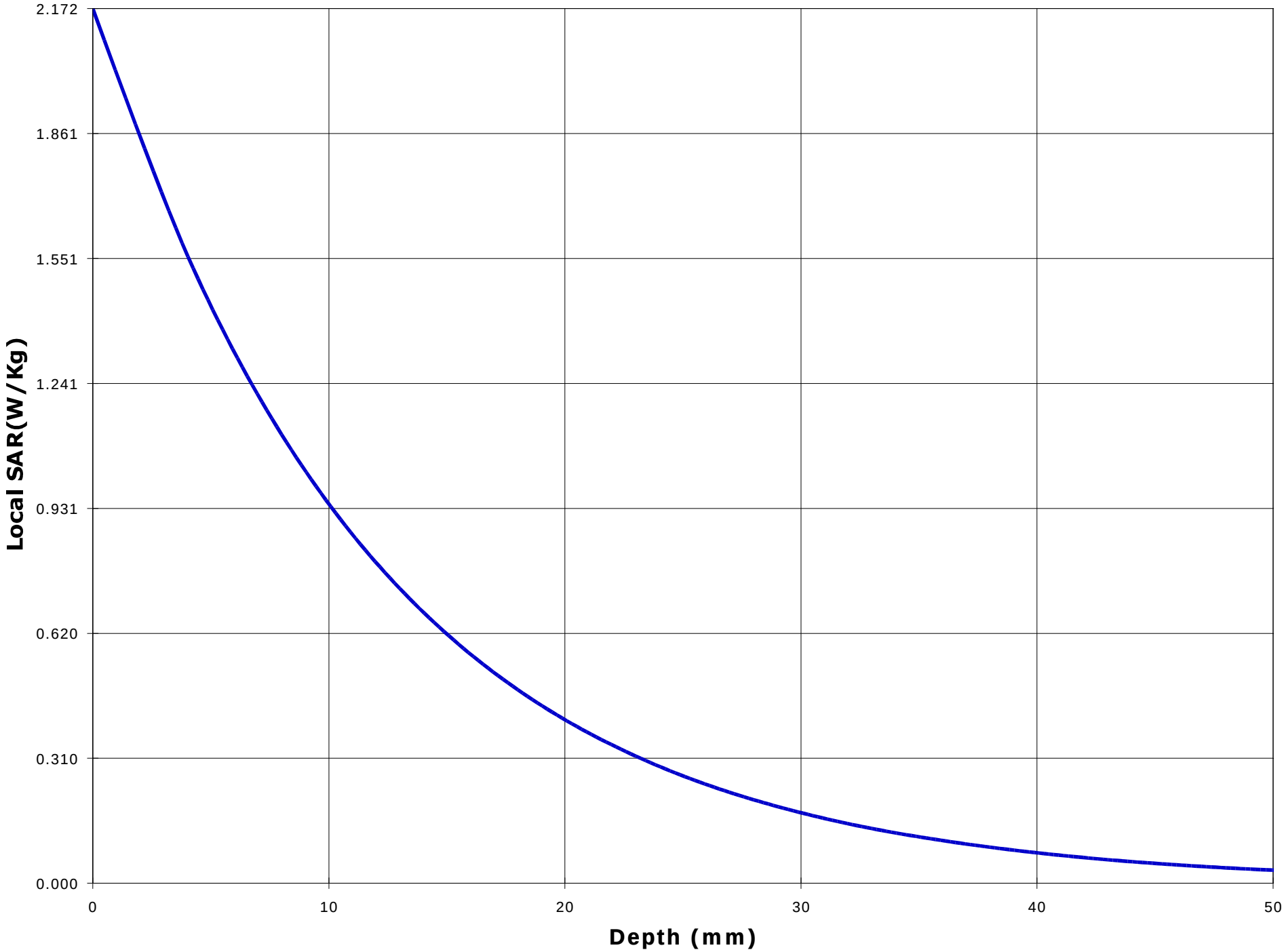

45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
-30 -20 -10 0 10
-30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

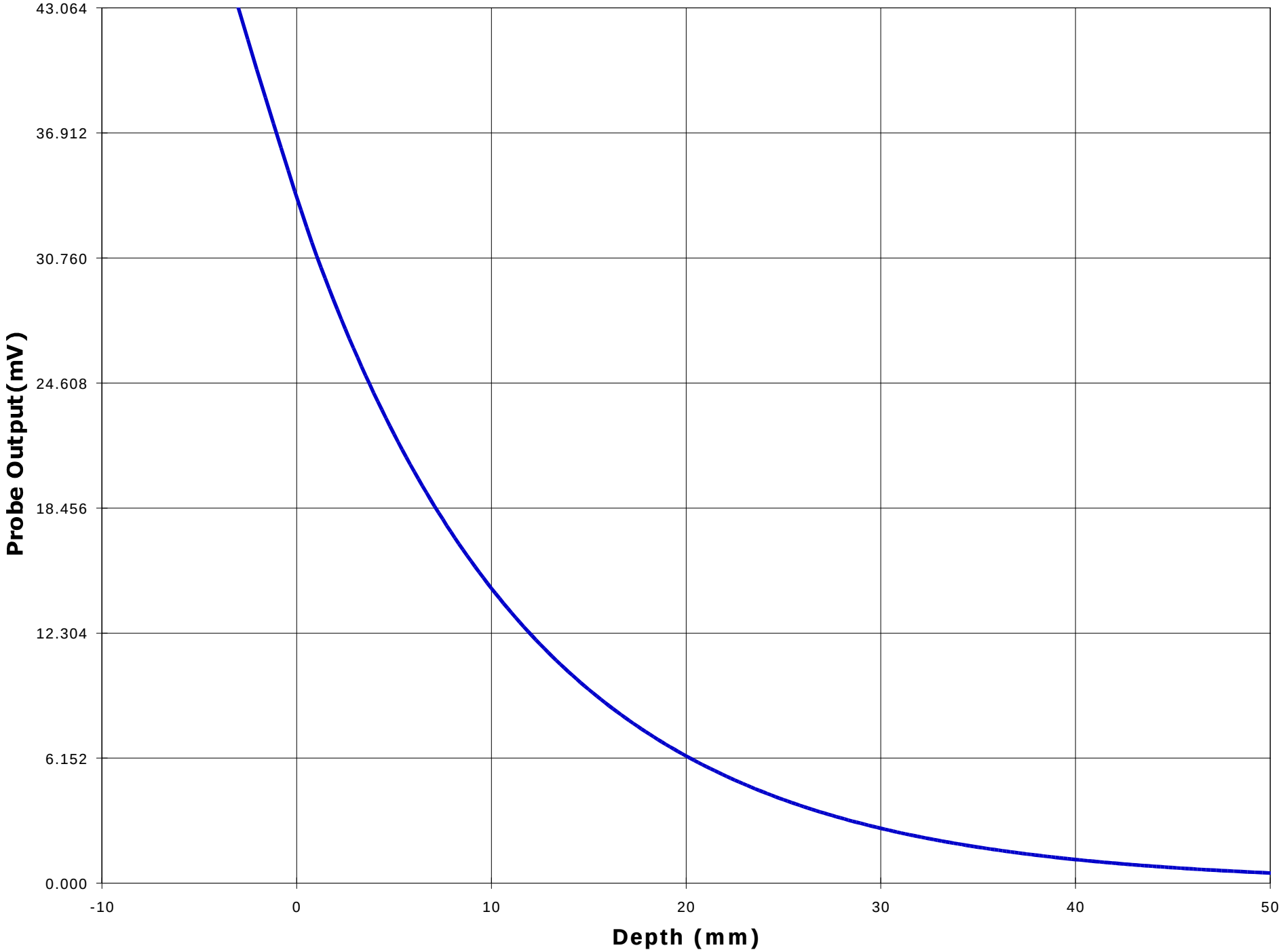

37.80
32.40
27.00
21.60
16.20
10.80
5.40


45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
-5
0
5
10
70
75
80
85
37.80
32.40
27.00
21.60
16.20
10.80
5.40


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
37.80
32.40
27.00
21.60
16.20
10.80
5.40


90
85
80
75
70
Y Axis (mm)
-10
-5
0
5
10
X Axis (mm)
37.80
32.40
27.00
21.60
16.20
10.80
5.40


2.172
1.861
1.551
1.241
0.931
0.620
0.310
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


43.064
36.912
30.760
24.608
18.456
12.304
6.152
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/16/00
Time : 8:22:17 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 173.95 N
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.95
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.065

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

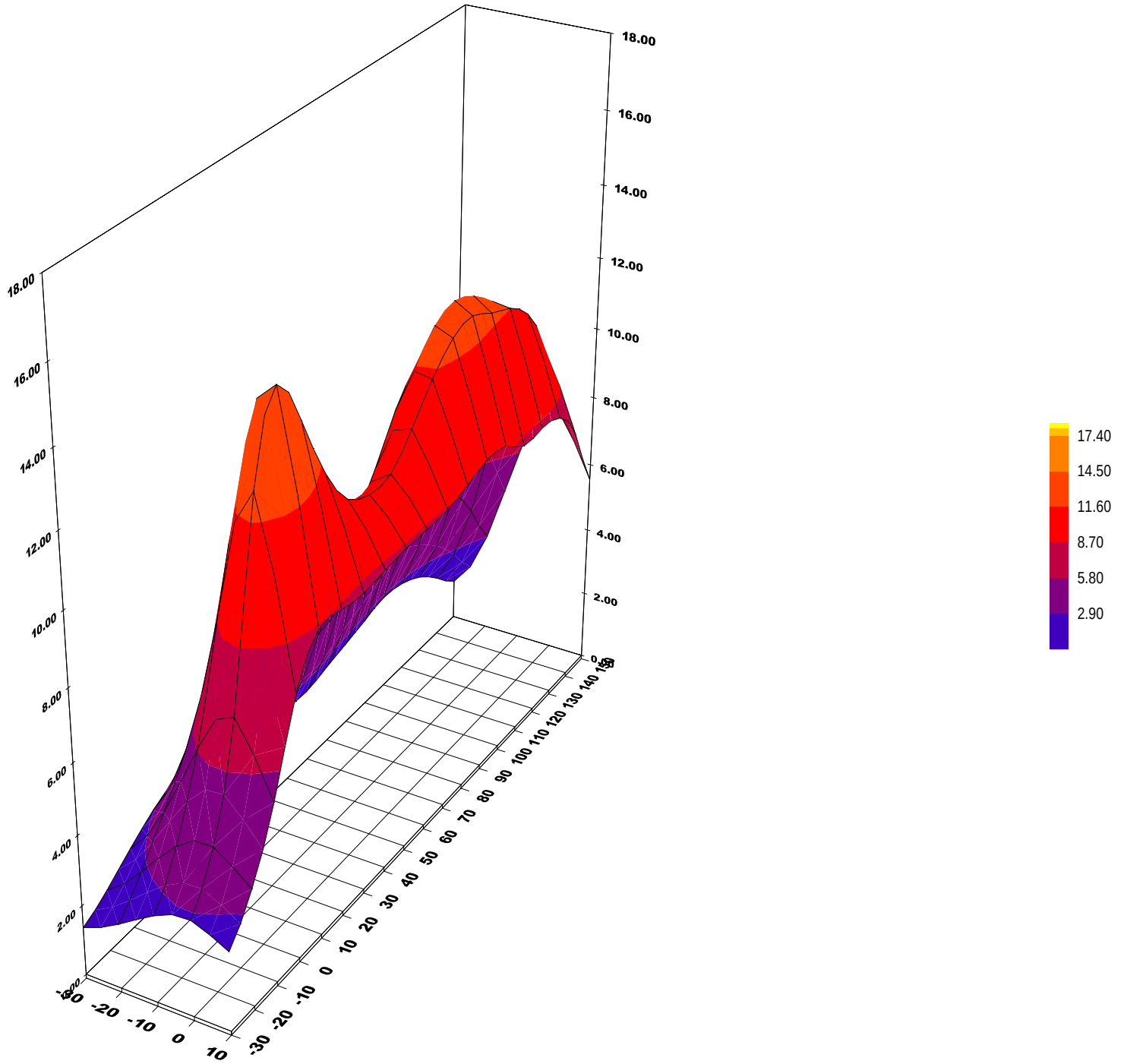
Location of Maximum Field :

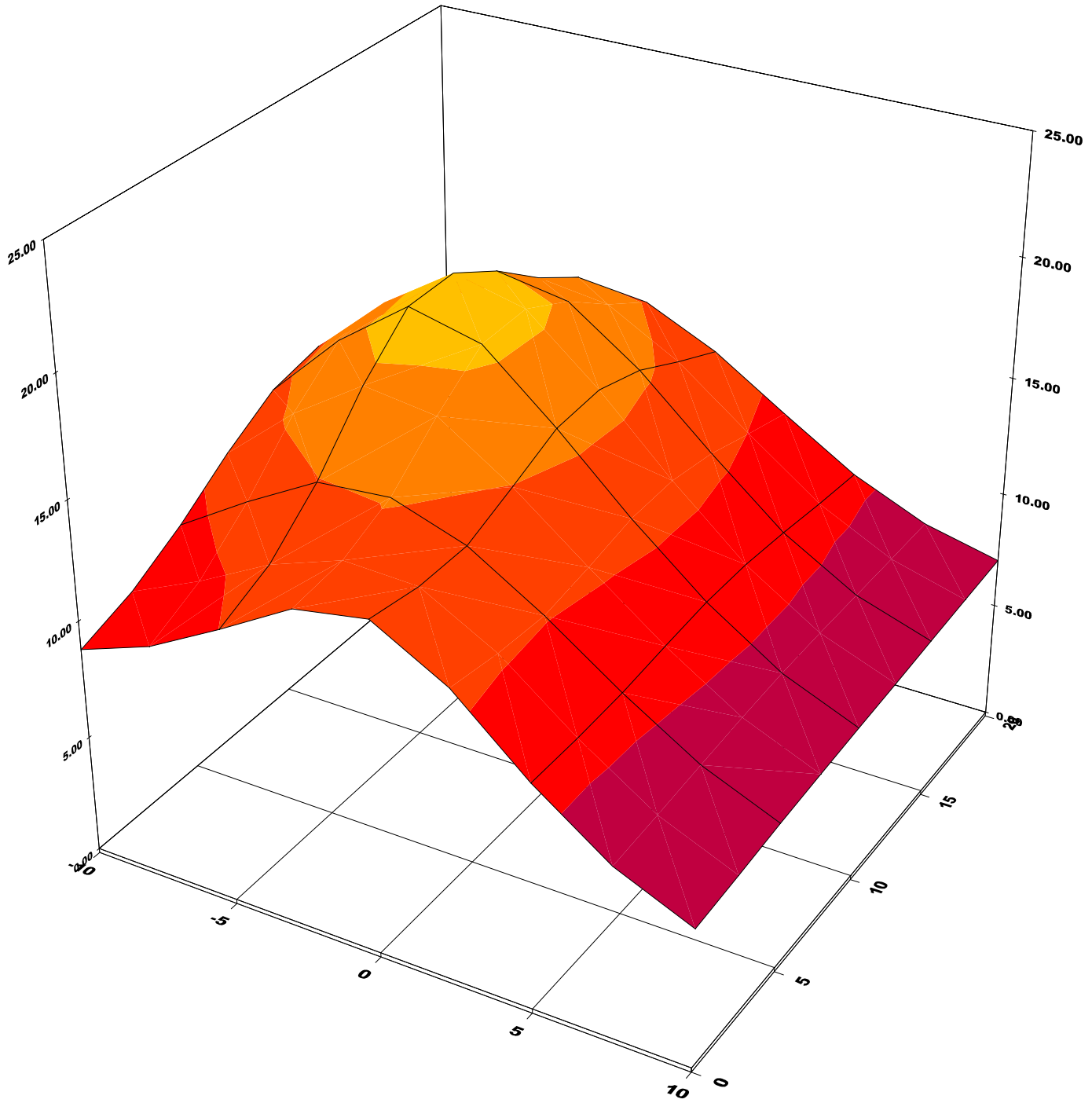
X = -5 Y = 10

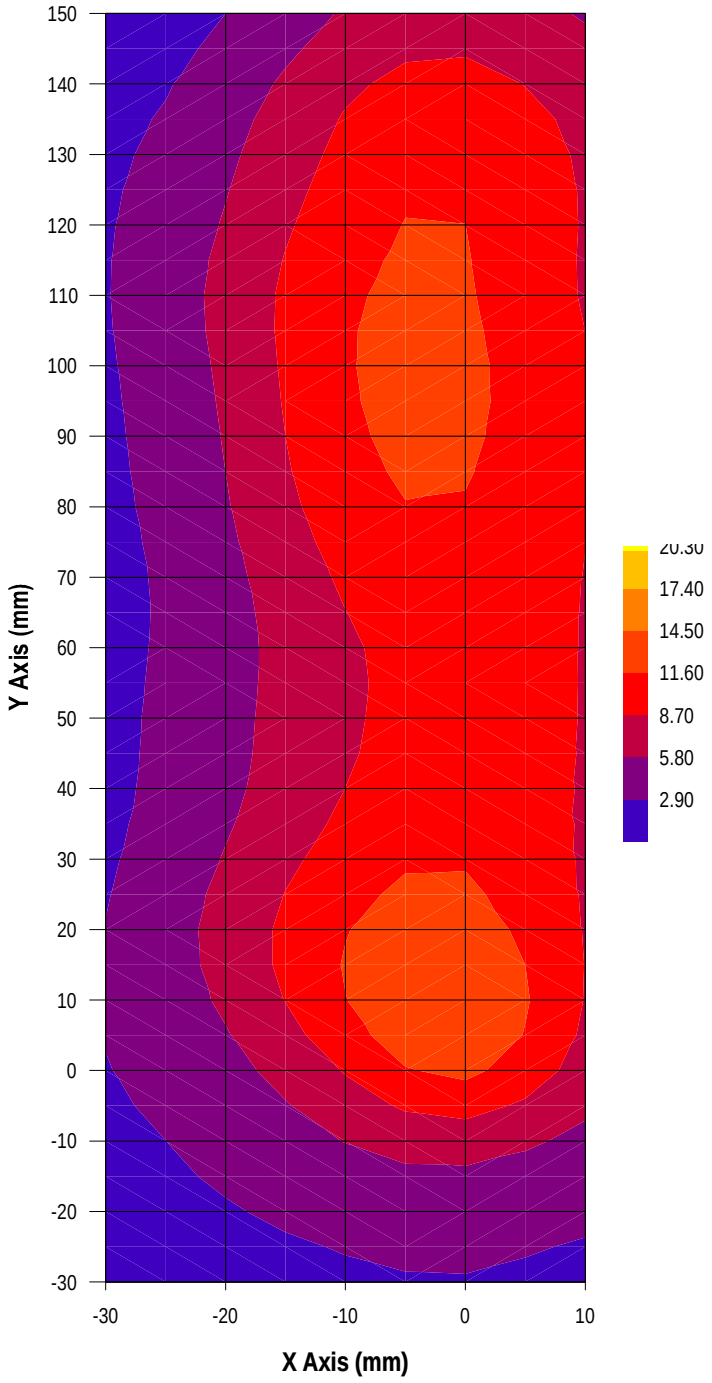
Measured Values (mV) :

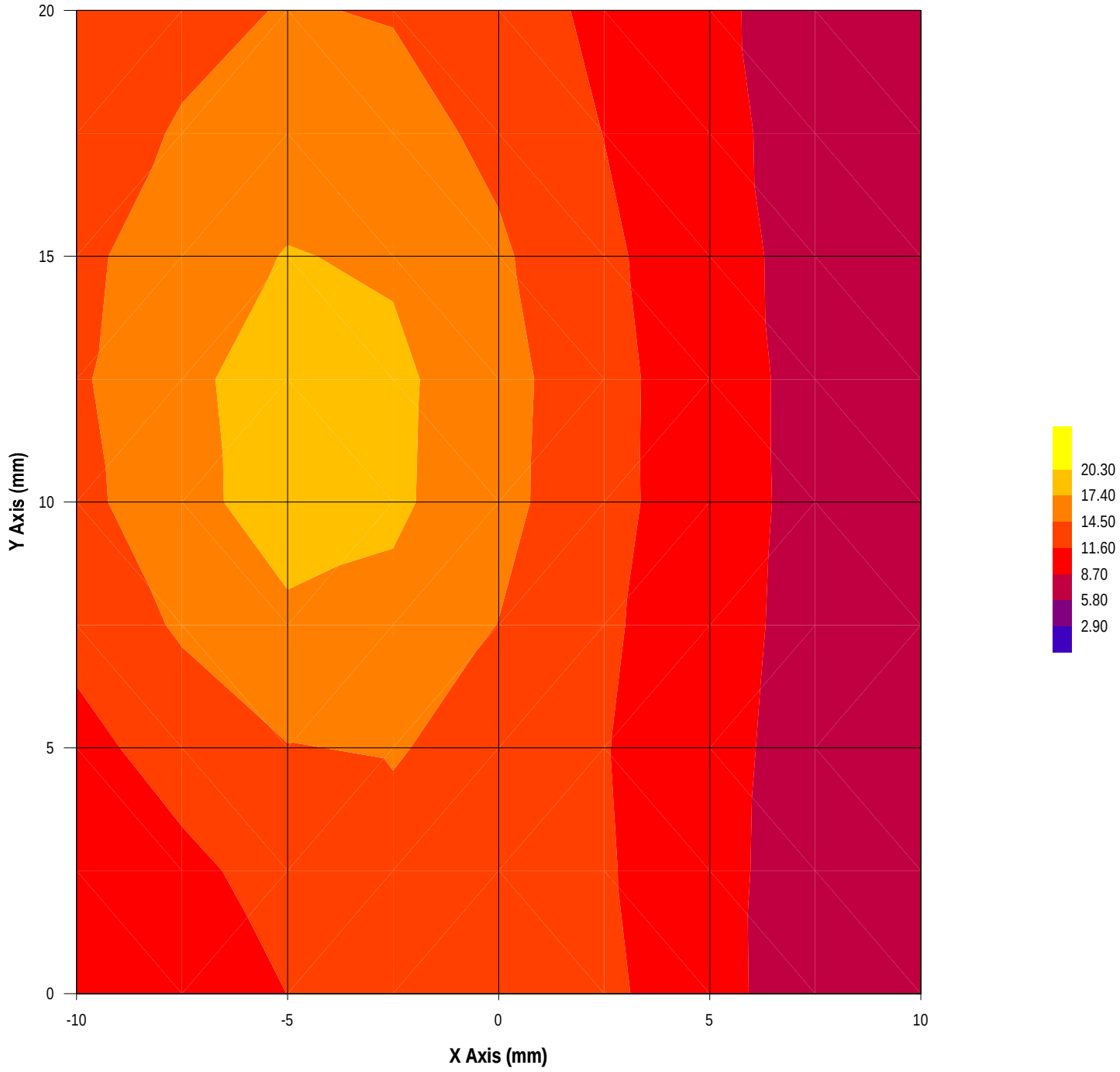
22.774	11.865	7.374	5.899	5.167	4.550
4.109	3.666	3.357	3.033	2.829	

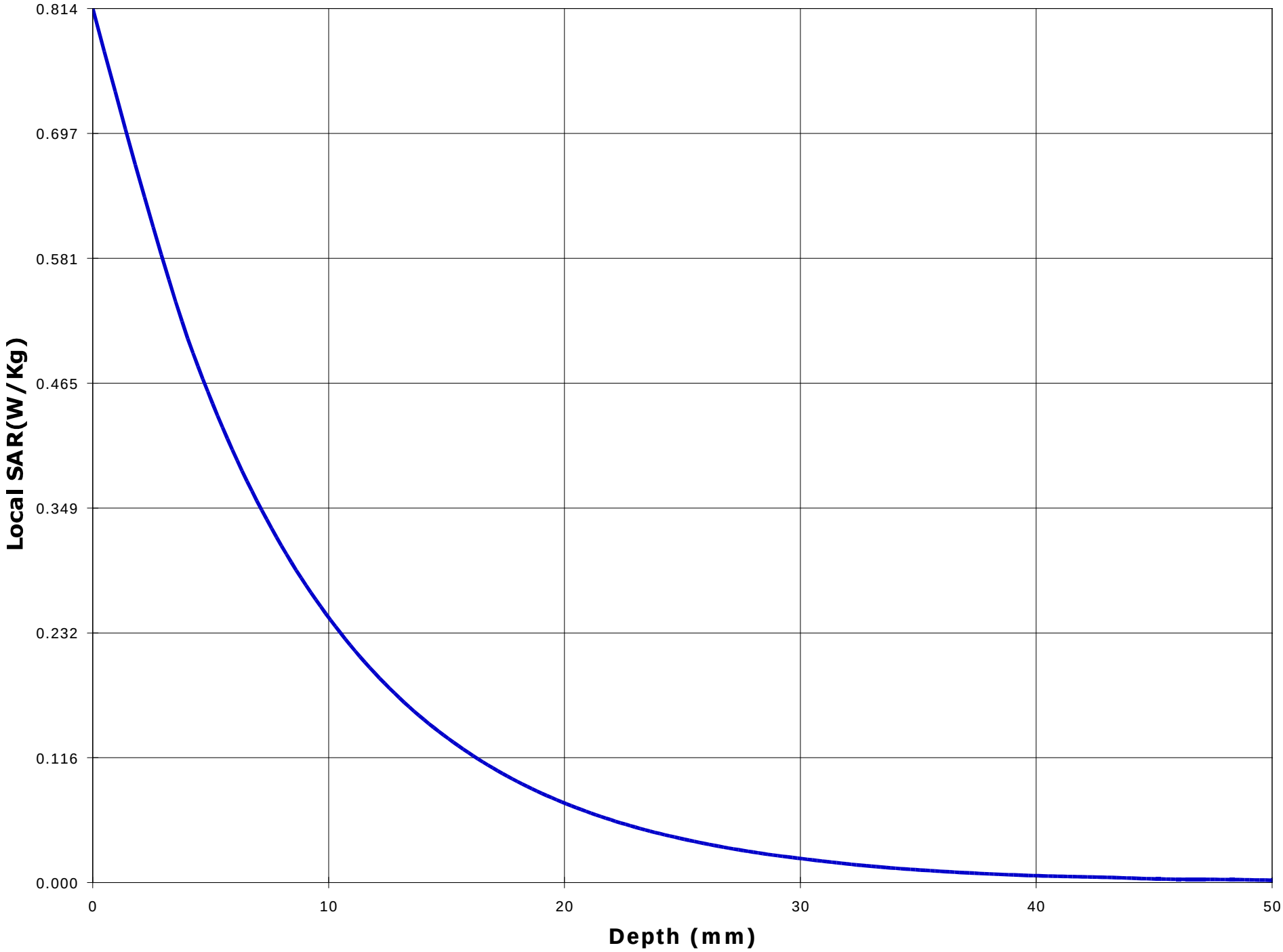
Peak Voltage (mV) : 16.136 **1 Cm Voltage (mV)** : 4.836 **SAR (W/Kg)** : 0.711

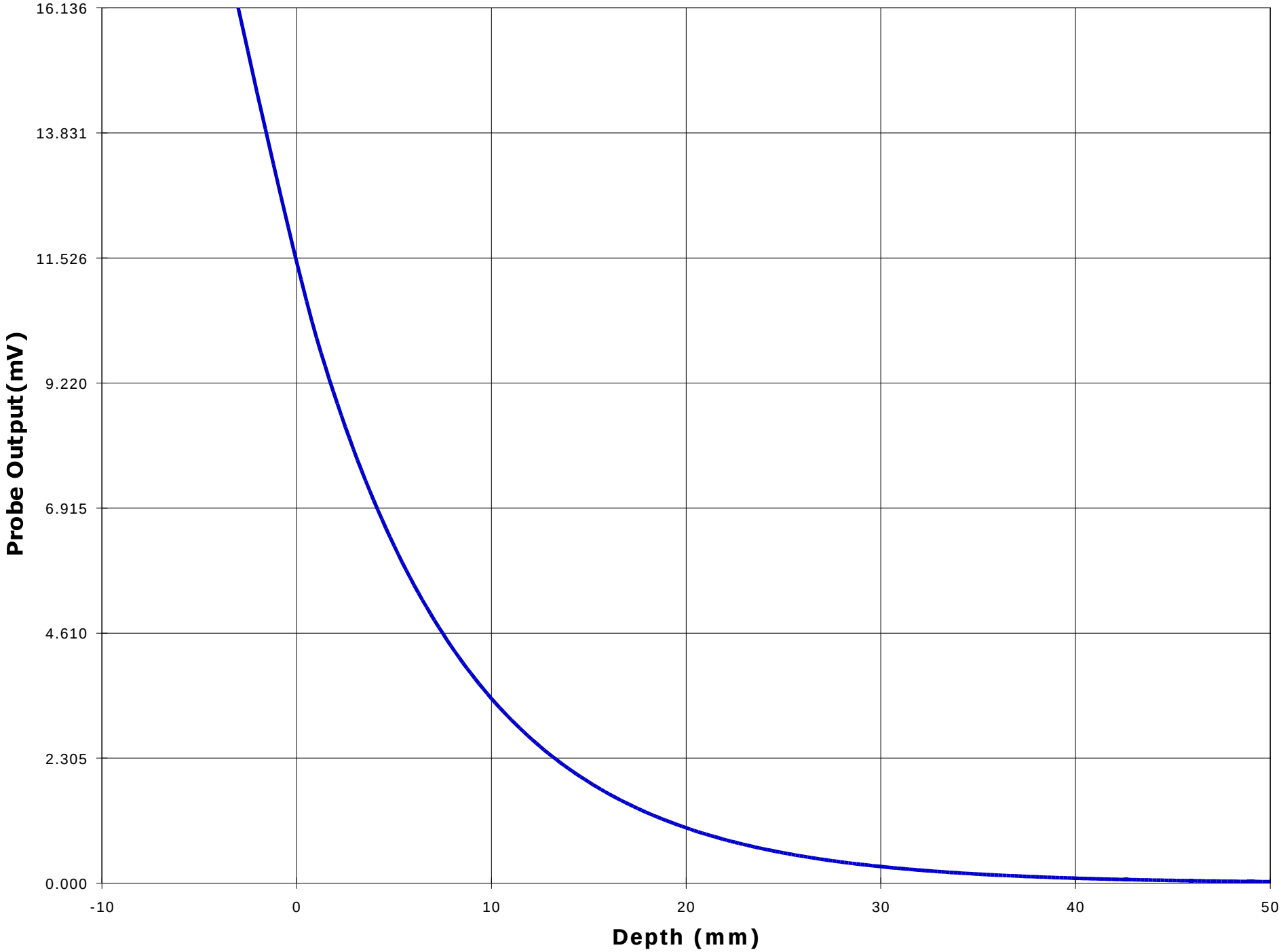

18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
-30 -20 -10 0 10
-30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
17.40
14.50
11.60
8.70
5.80
2.90


25.00
20.00
15.00
10.00
5.00
-5
0
5
10
15
20.30
17.40
14.50
11.60
8.70
5.80
2.90


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
20.30
17.40
14.50
11.60
8.70
5.80
2.90


20
15
10
5
0
Y Axis (mm)
-10
-5
0
5
10
X Axis (mm)
20.30
17.40
14.50
11.60
8.70
5.80
2.90


0.814
0.697
0.581
0.465
0.349
0.232
0.116
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


16.136
13.831
11.526
9.220
6.915
4.610
2.305
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

ANNEX B: Waist SAR Measurement

Waist with the large capacity battery pack, normal belt-clip (M/N: MB-68)
The tip of the antenna in contact with the phantom

136.05 MHz W	- 2.719 (5.438) W/Kg
155.05 MHz W	- 0.845 (1.690) W/Kg
173.05 MHz W	- 0.809 (1.618) W/Kg
136.05 MHz N	- 2.748 (5.497) W/Kg
155.05 MHz N	- 0.795 (1.590) W/Kg
173.95 MHz N	- 0.763 (1.527) W/Kg

* The SAR Measurement inside the parenthesis indicates the reading before 50 % duty factor is applied for the half-duplex typ

Test Information

Date : 11/16/00
Time : 9:50:56 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 136.05 W
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.92
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.035

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

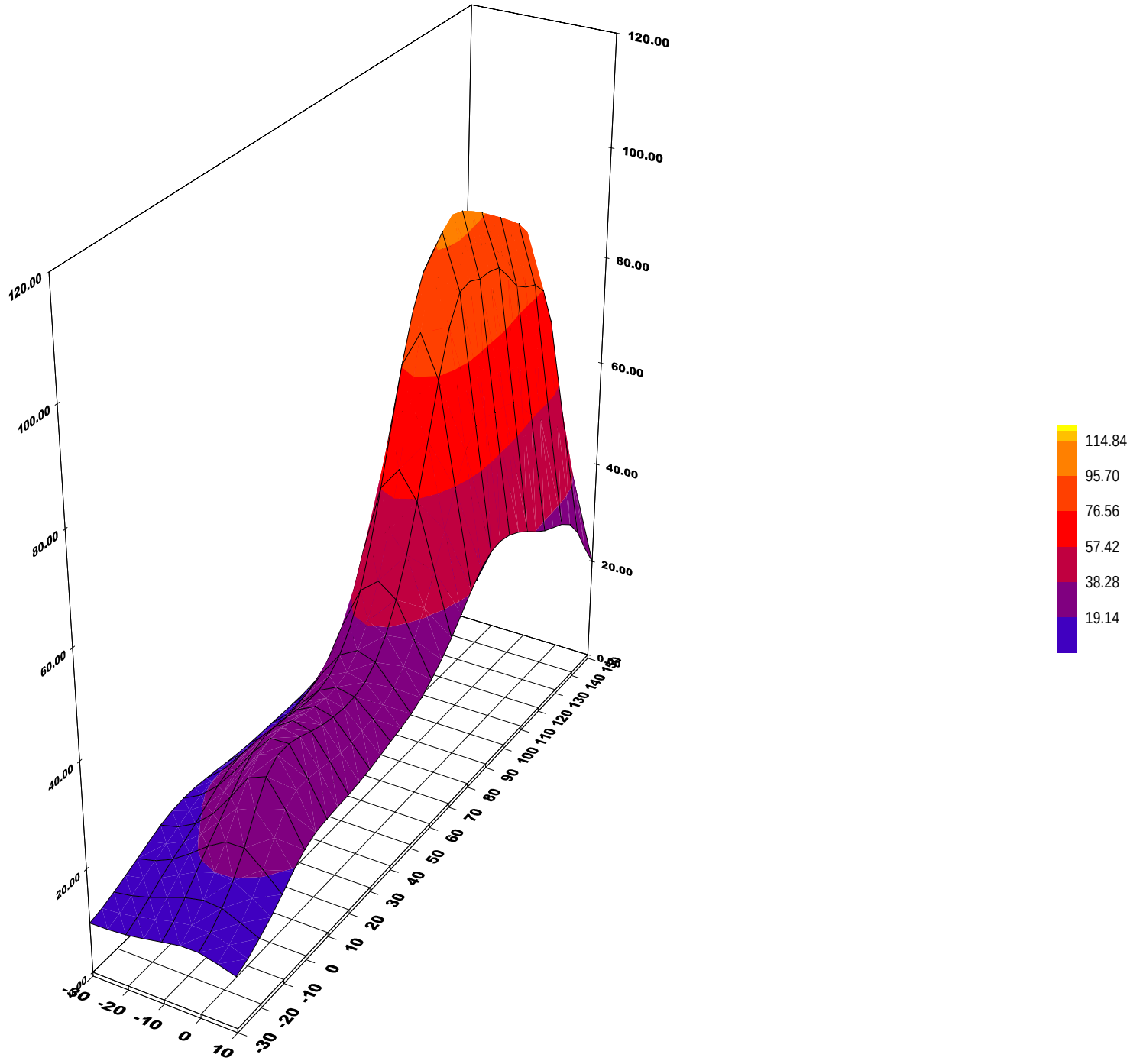
Location of Maximum Field :

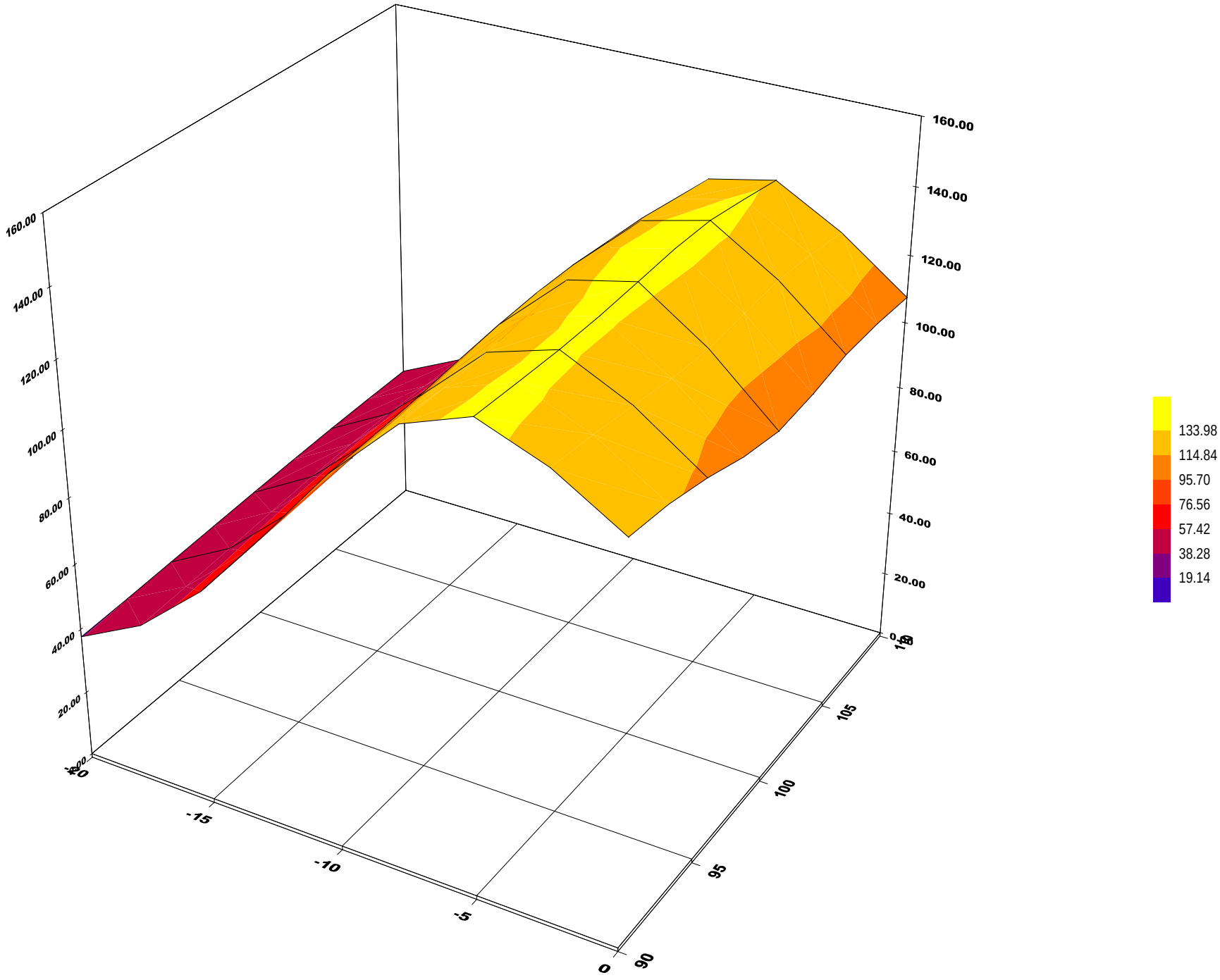
X = -5 Y = 105

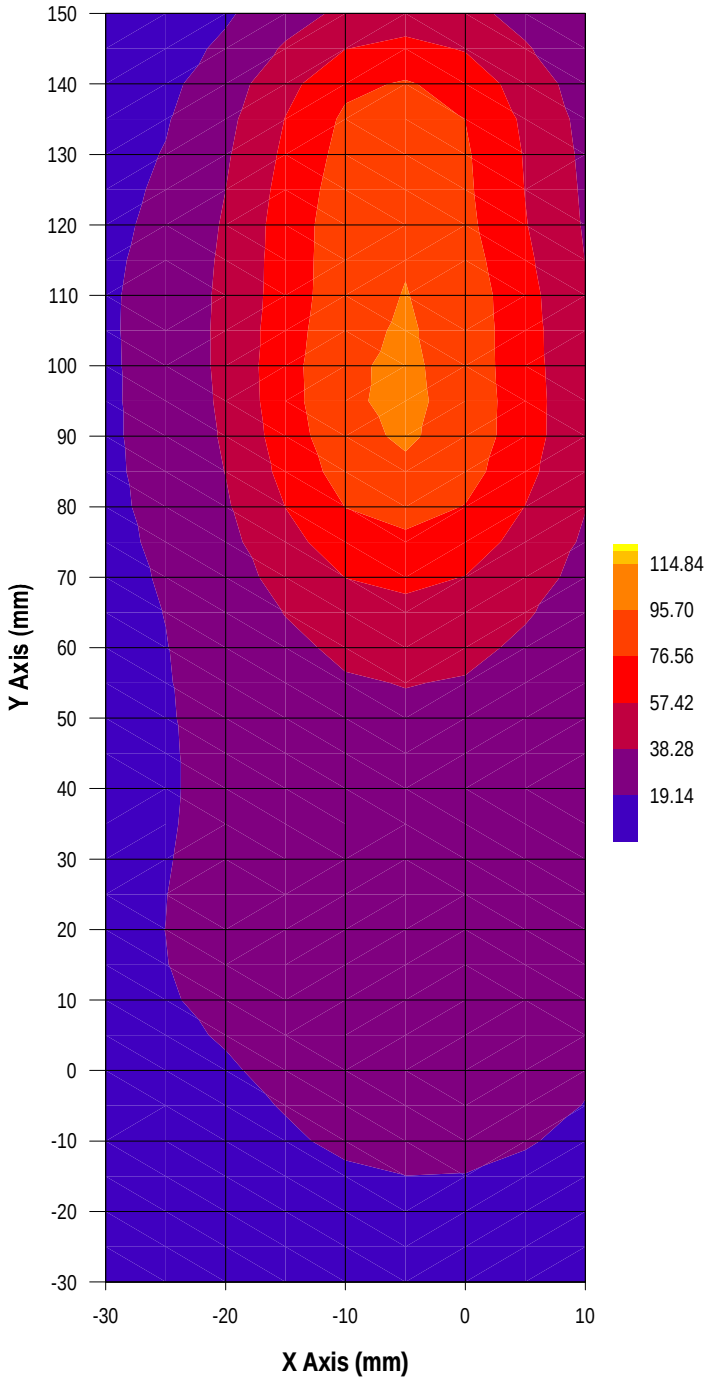
Measured Values (mV) :

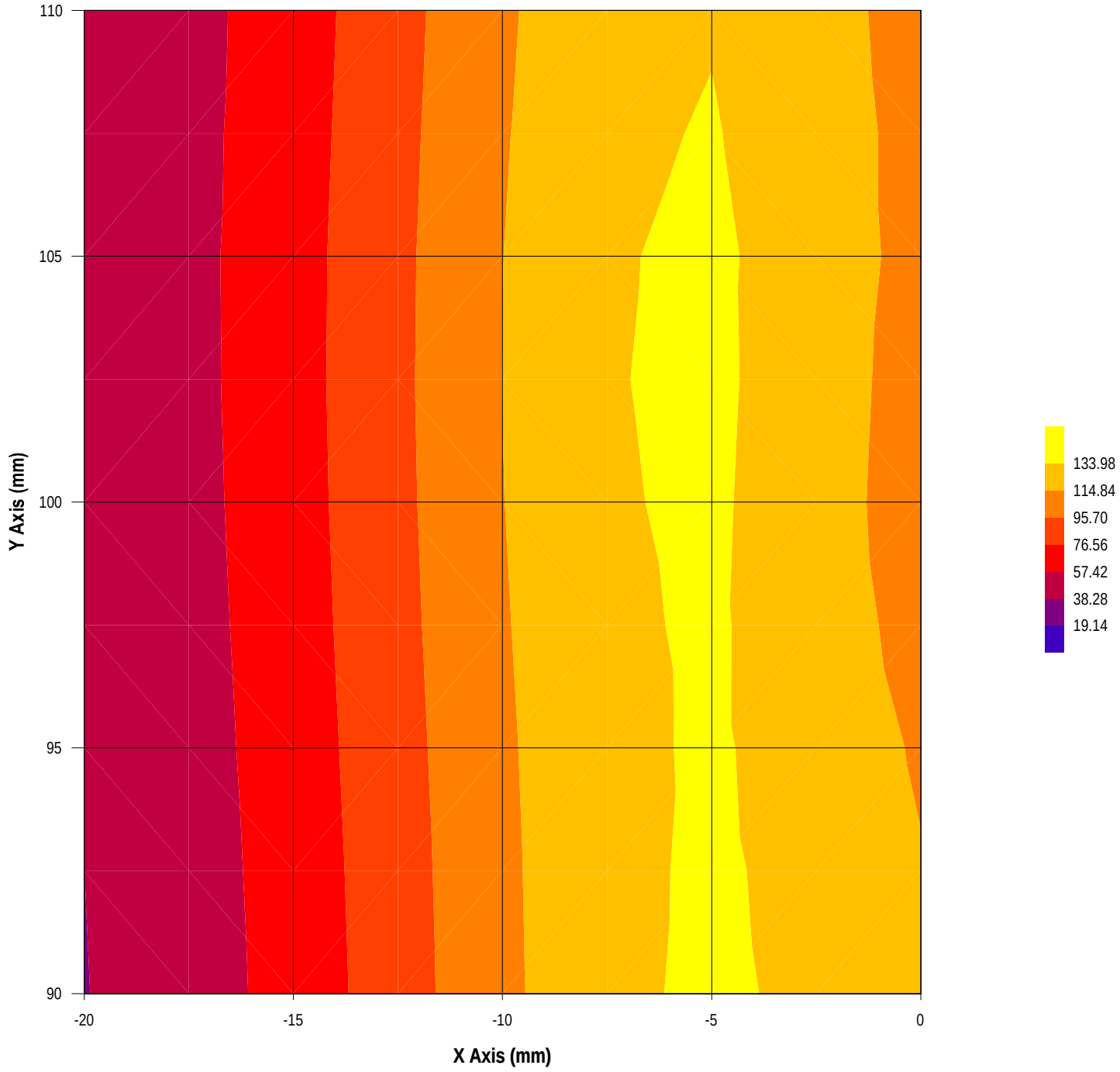
149.339	120.019	79.727	59.812	48.475	41.274
35.550	31.221	27.316	24.244	21.522	

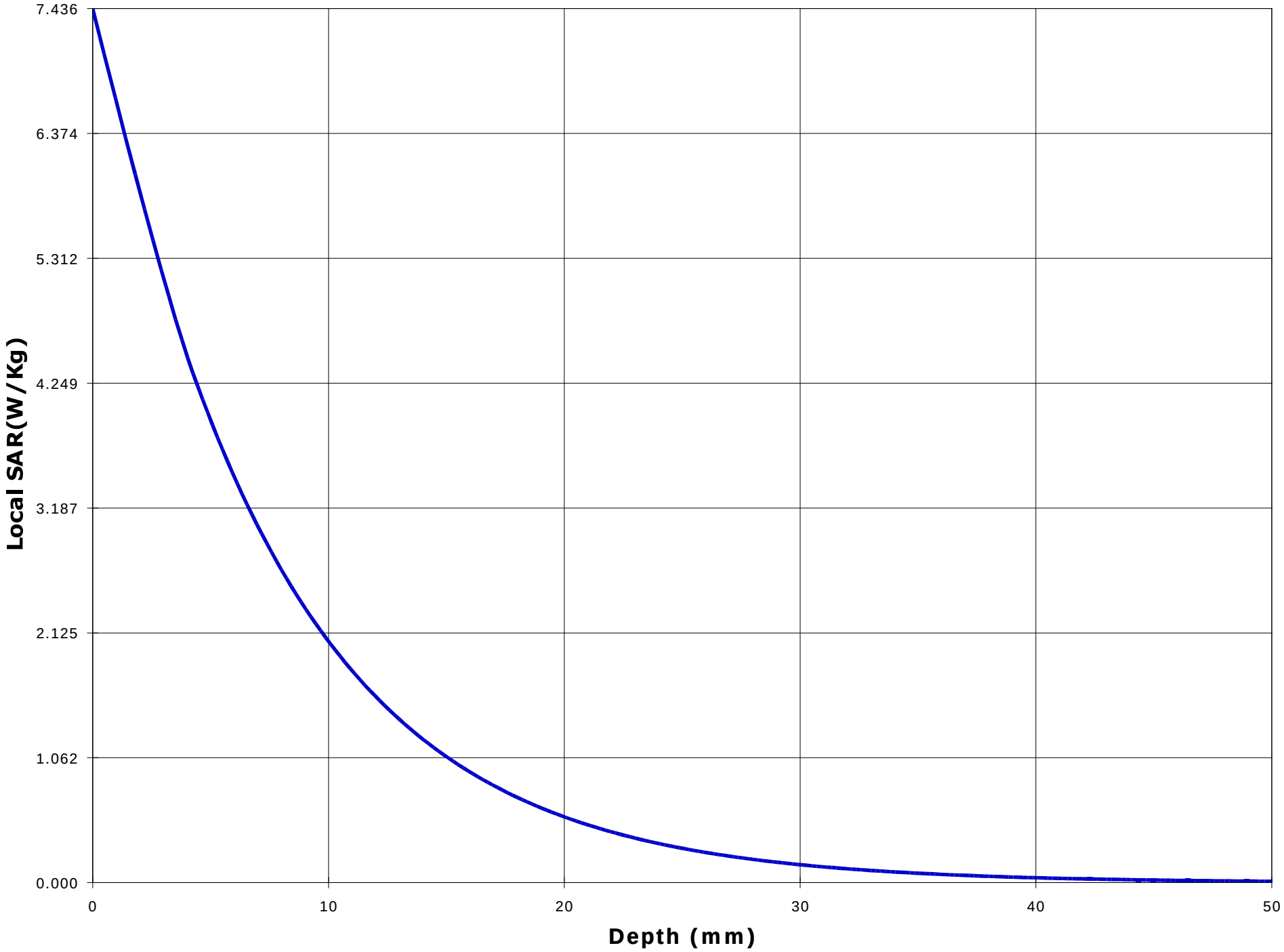
Peak Voltage (mV) : 147.470 **1 Cm Voltage (mV)** : 40.185 **SAR (W/Kg)** : 5.438

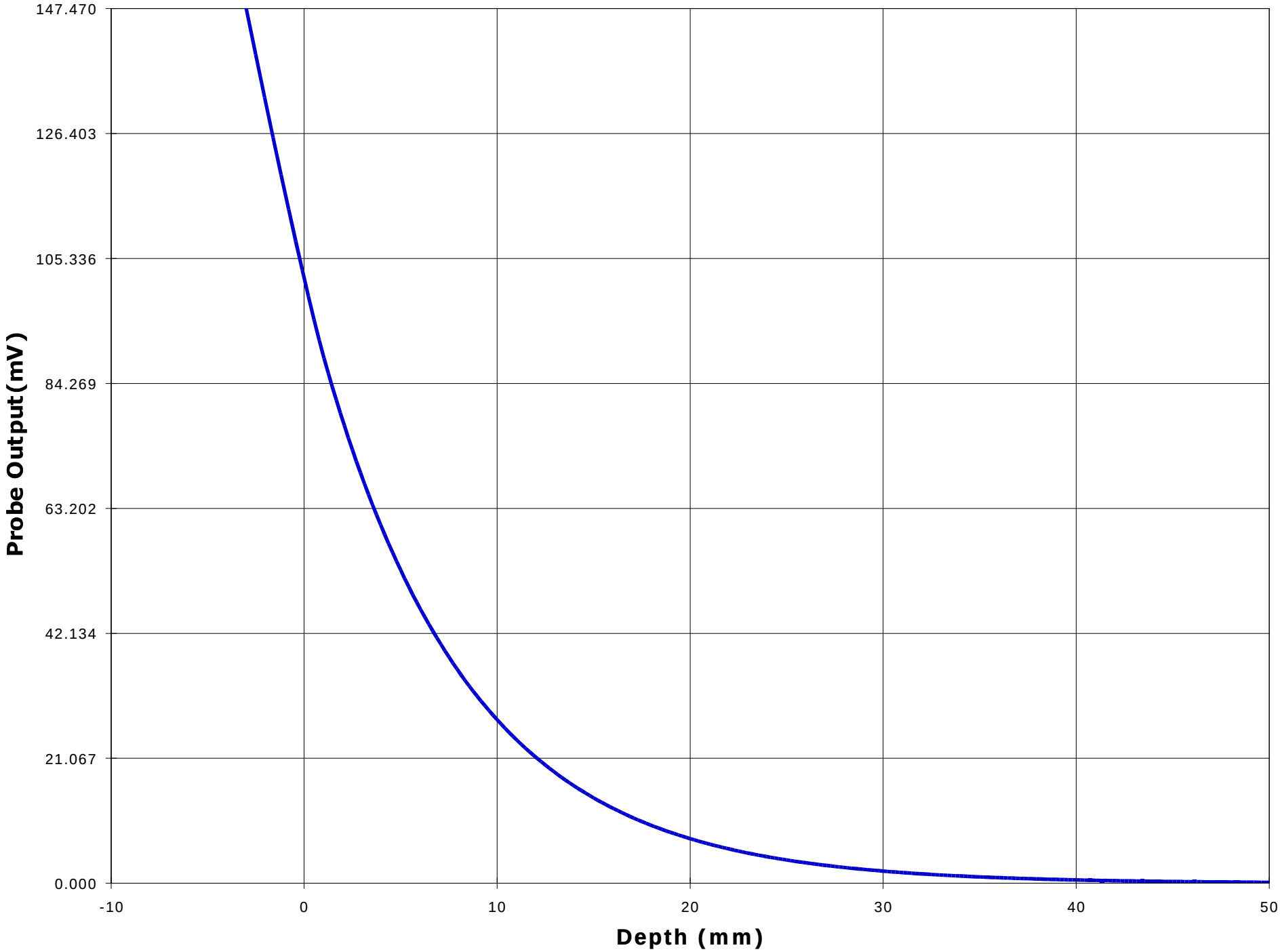

120.00
100.00
80.00
60.00
40.00
20.00
114.84
95.70
76.56
57.42
38.28
19.14


160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
-20
-15
-10
-5
0
90
95
100
105
133.98
114.84
95.70
76.56
57.42
38.28
19.14


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
114.84
95.70
76.56
57.42
38.28
19.14


110
105
100
95
90
Y Axis (mm)
-20
-15
-10
-5
0
X Axis (mm)
133.98
114.84
95.70
76.56
57.42
38.28
19.14


7.436
6.374
5.312
4.249
3.187
2.125
1.062
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


147.470
126.403
105.336
84.269
63.202
42.134
21.067
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/16/00
Time : 10:05:12 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 155.05 W
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.80
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 4.912

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

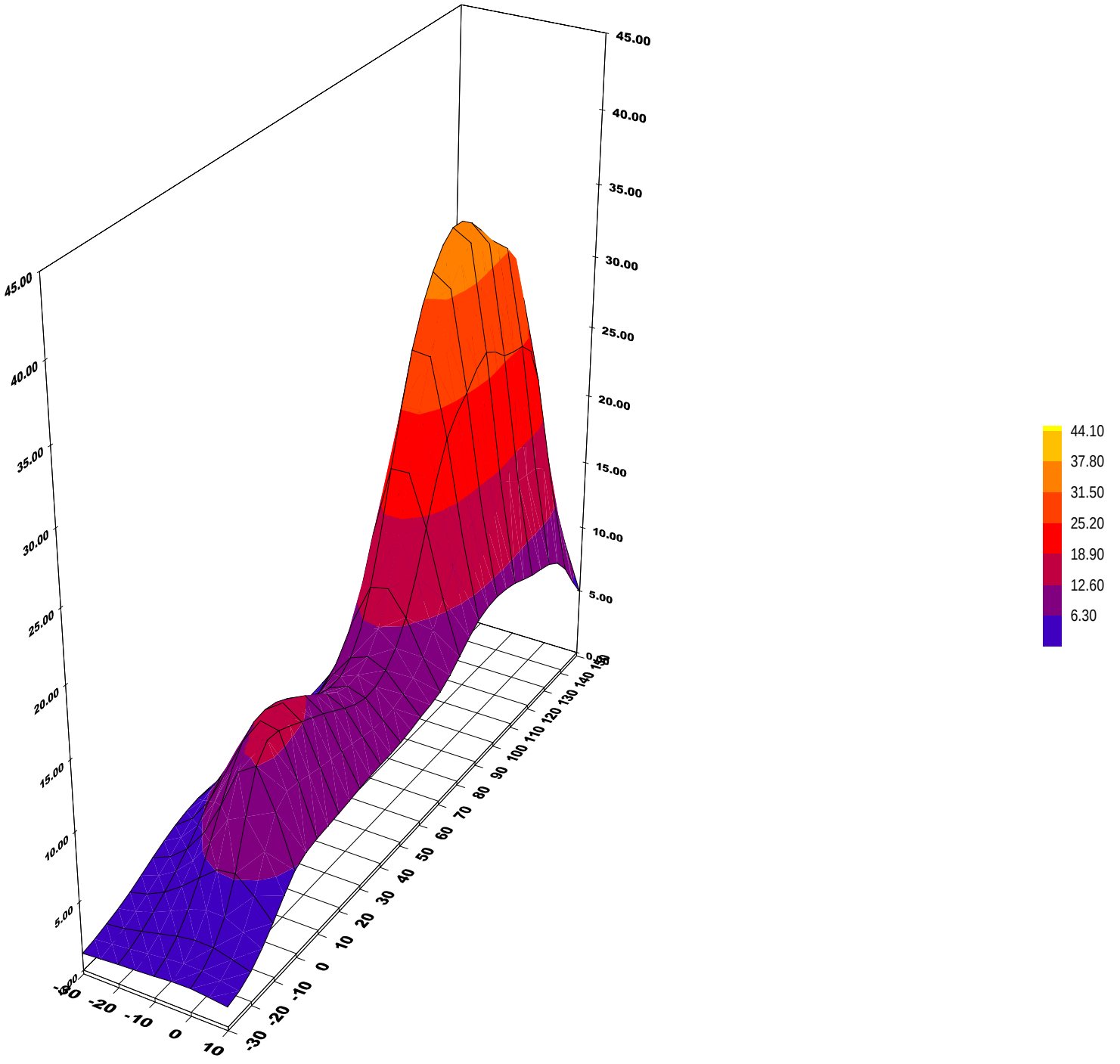
Location of Maximum Field :

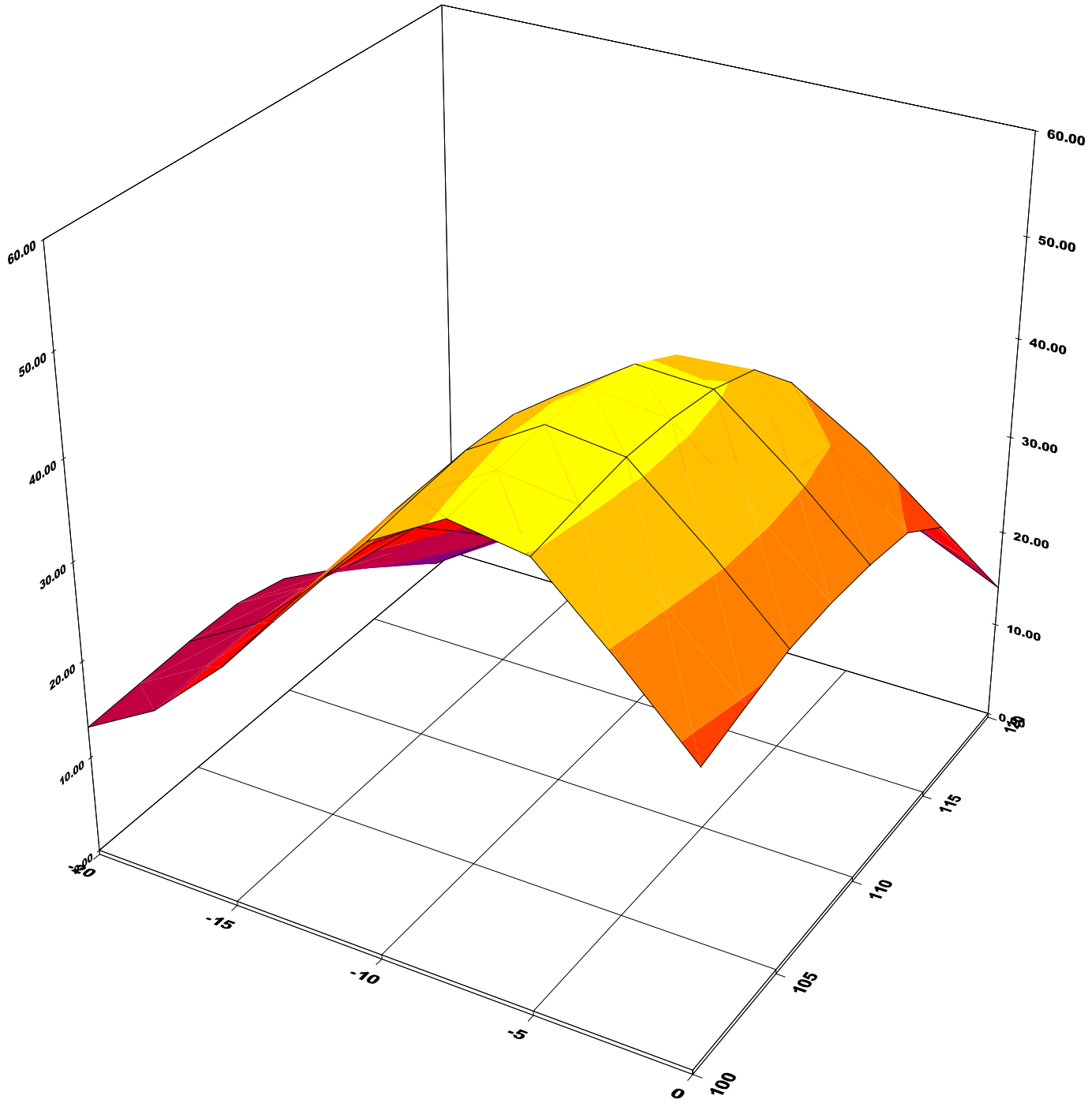
X = -5 Y = 105

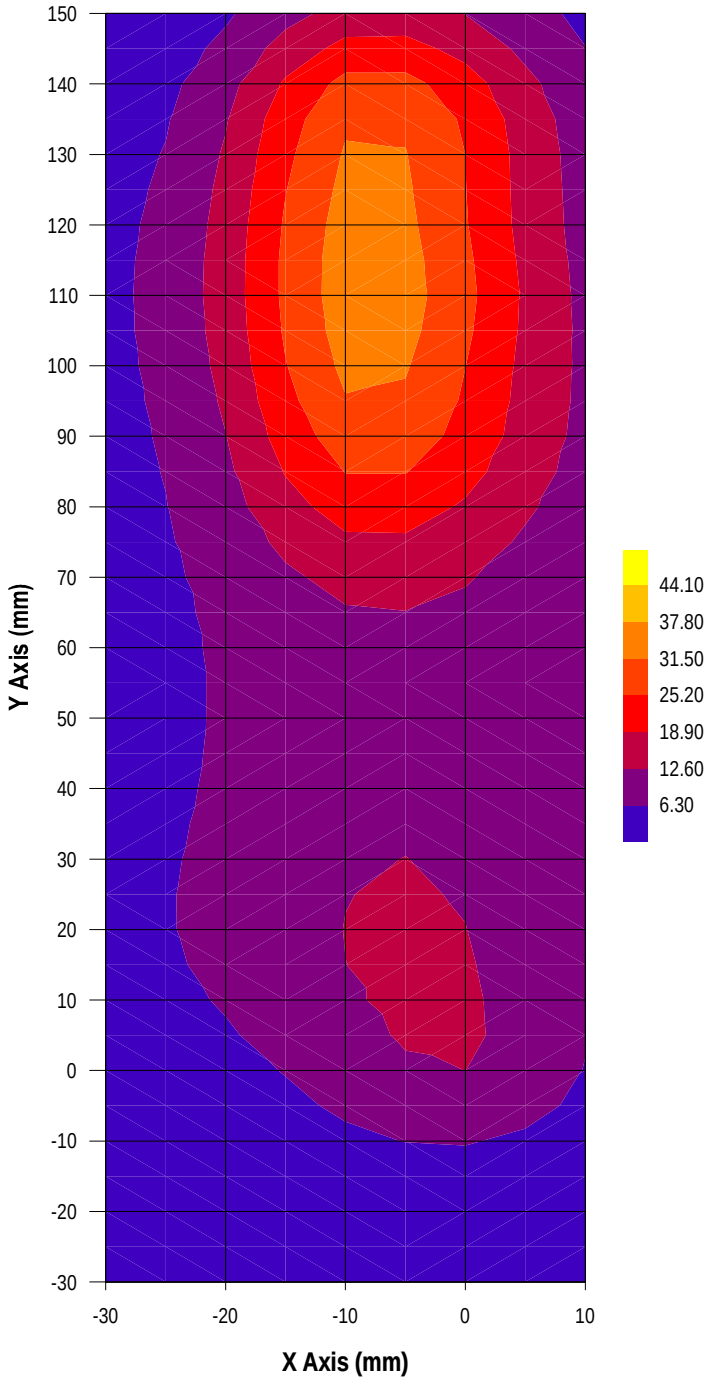
Measured Values (mV) :

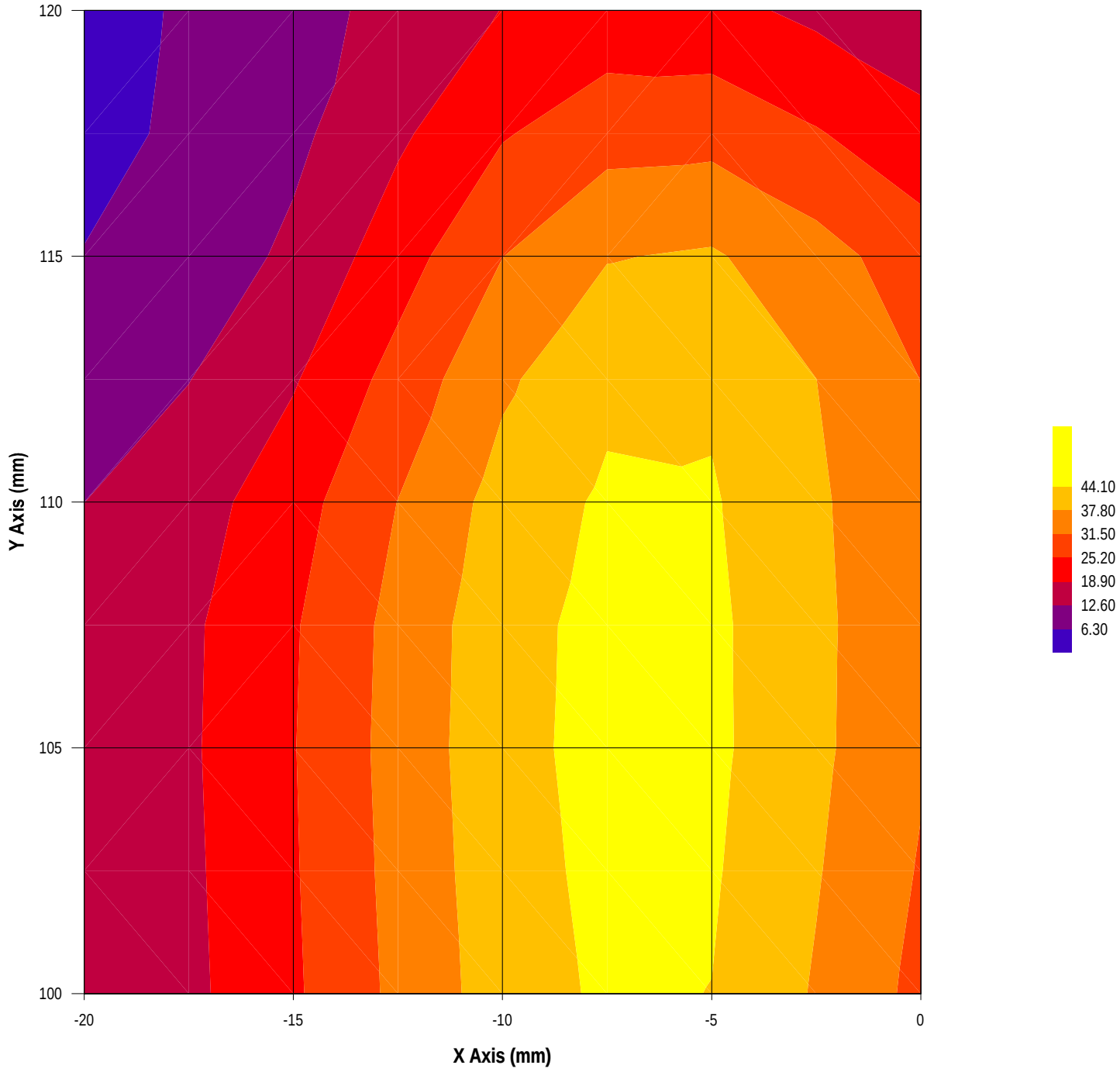
19.292	13.731	8.607	6.303	5.012	4.123
3.426	2.893	2.459	2.064	1.746	

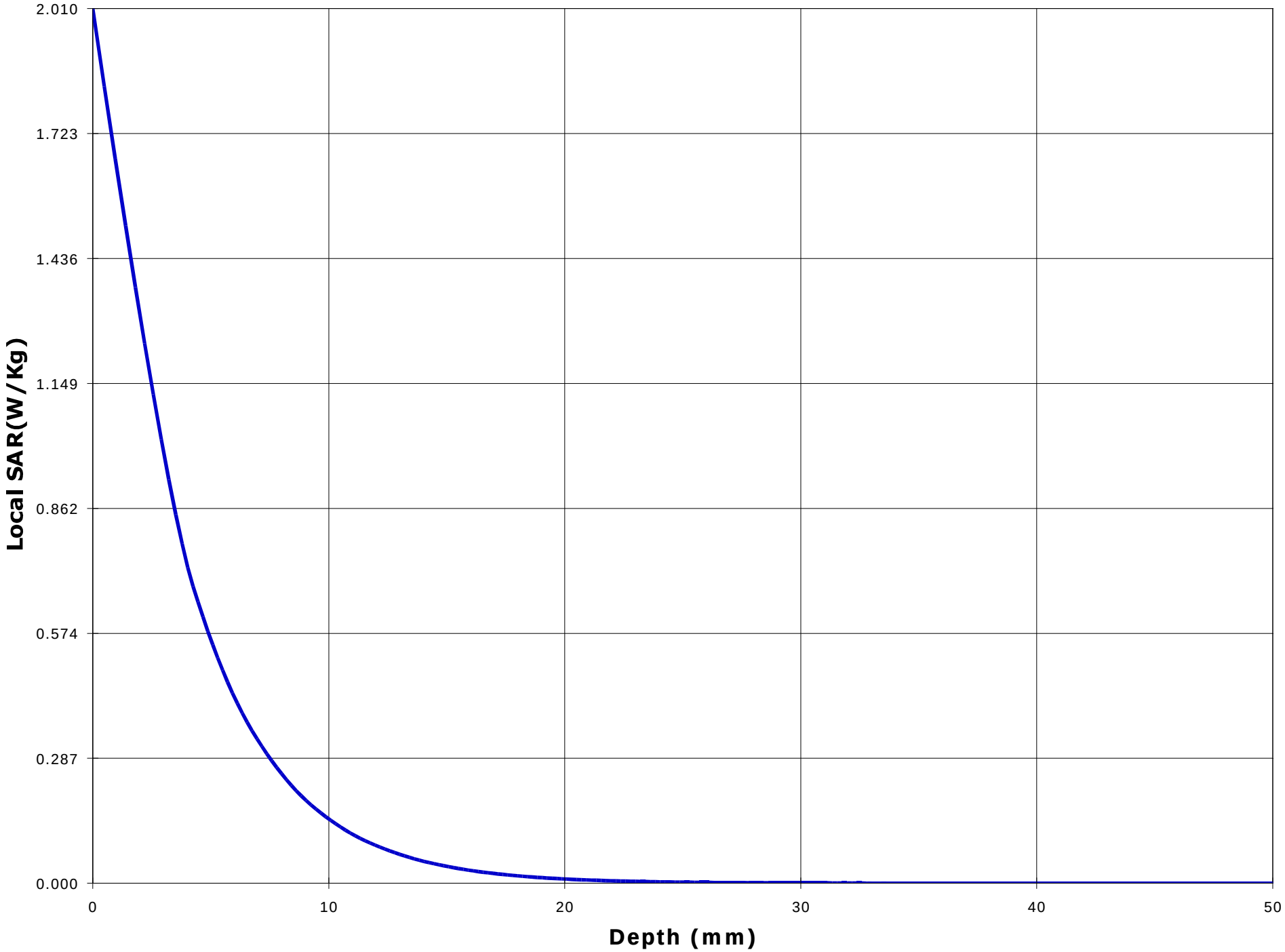
Peak Voltage (mV) : 39.864 **1 Cm Voltage (mV)** : 2.762 **SAR (W/Kg)** : 1.690

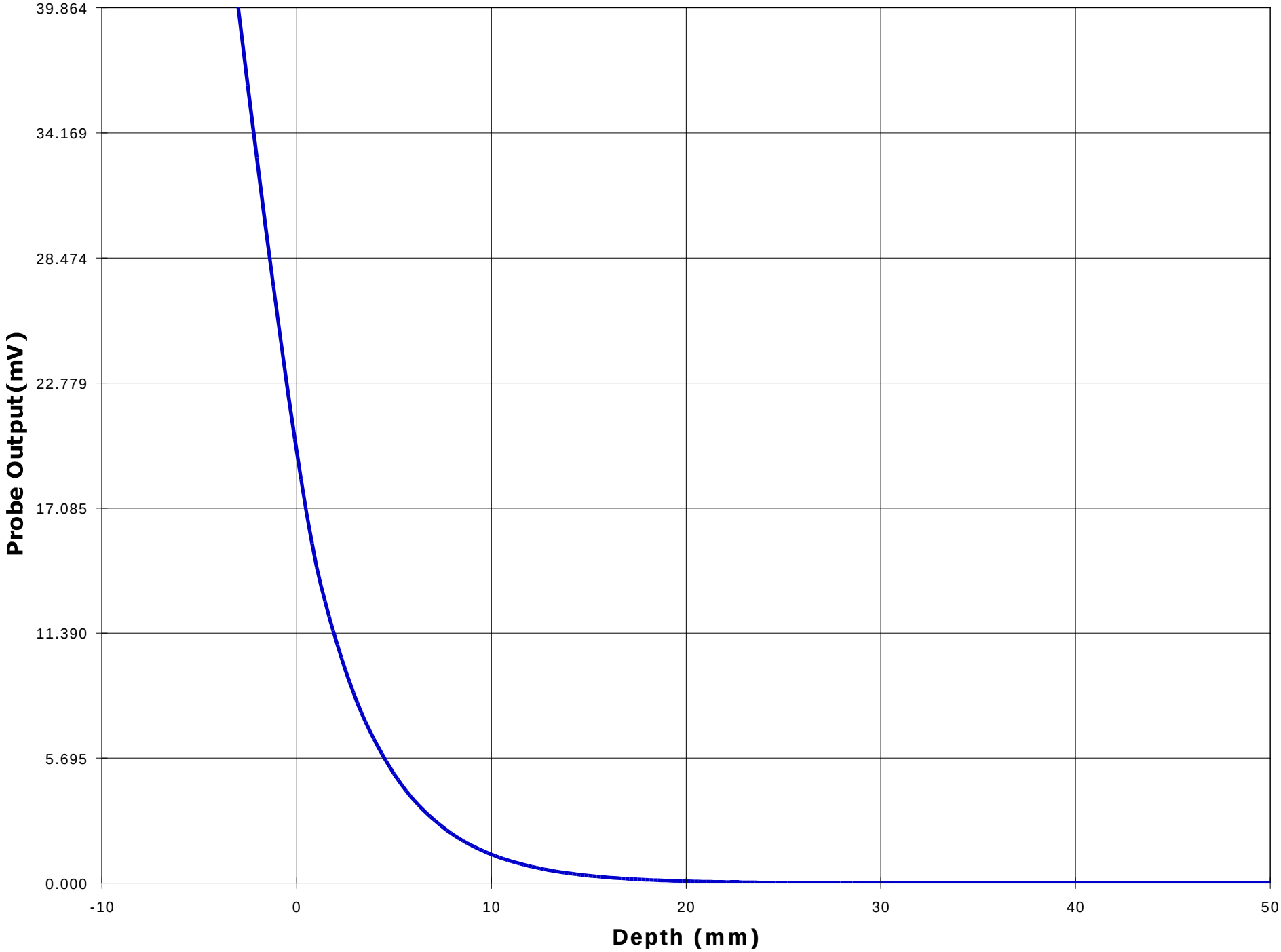

45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
-30 -20 -10 0 10
-30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
44.10
37.80
31.50
25.20
18.90
12.60
6.30


60.00
50.00
40.00
30.00
20.00
10.00
0
-15
-10
-5
100
105
110
115
44.10
37.80
31.50
25.20
18.90
12.60
6.30


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
44.10
37.80
31.50
25.20
18.90
12.60
6.30


120
115
110
105
100
Y Axis (mm)
-20
-15
-10
-5
0
X Axis (mm)
44.10
37.80
31.50
25.20
18.90
12.60
6.30


2.010
1.723
1.436
1.149
0.862
0.574
0.287
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


39.864
34.169
28.474
22.779
17.085
11.390
5.695
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/16/00
Time : 10:32:43 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 173.95 W
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.90
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.014

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

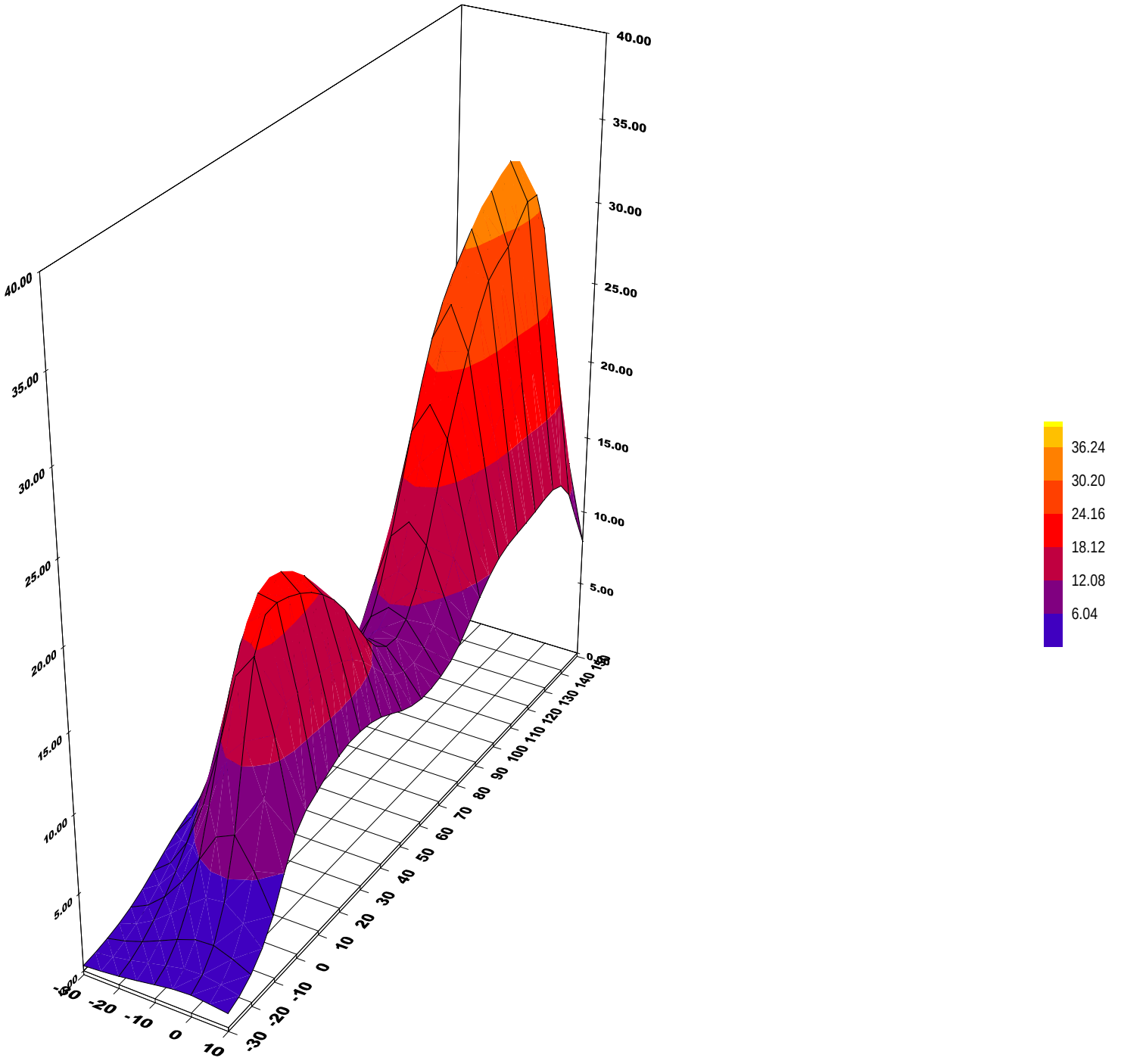
Location of Maximum Field :

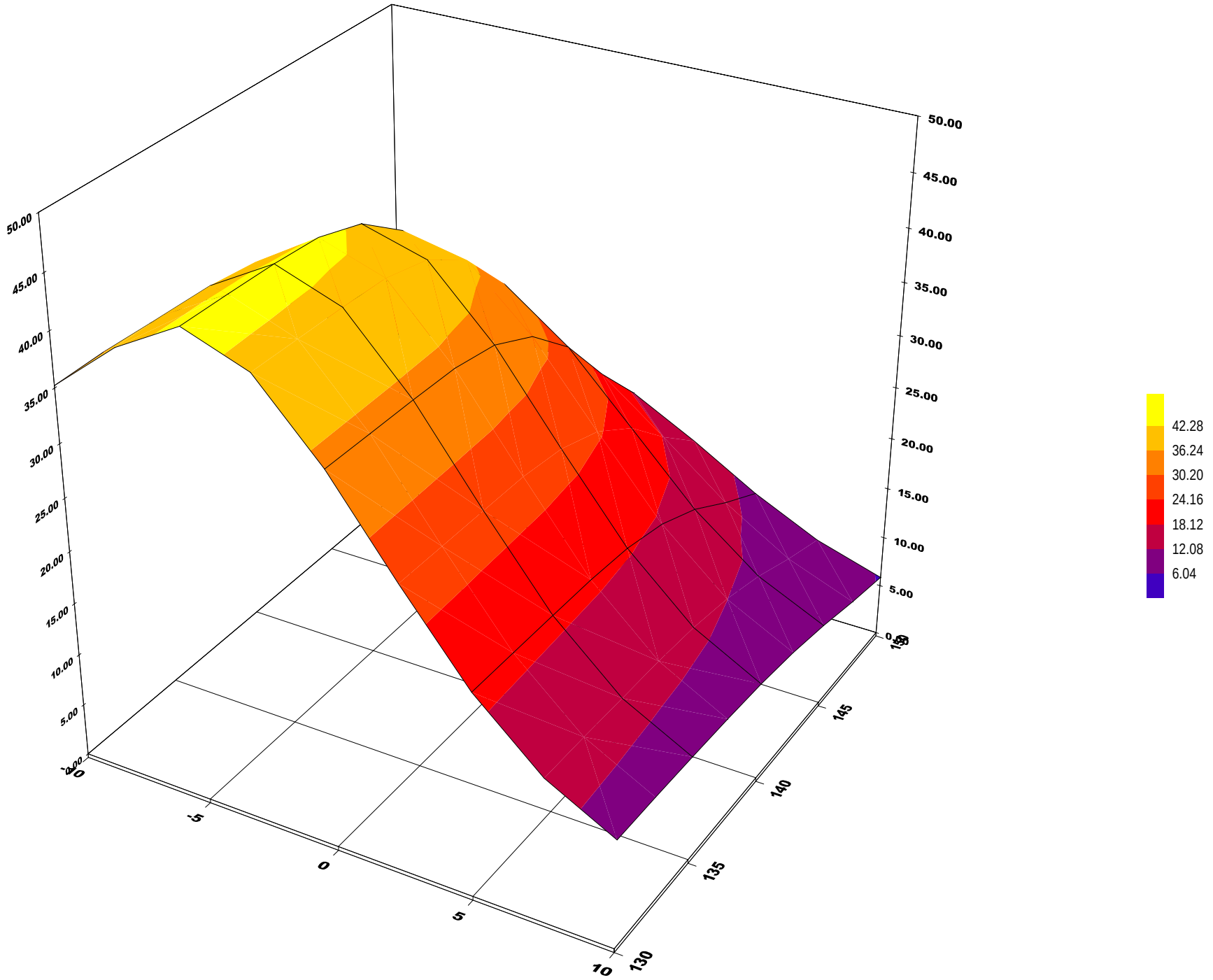
X = -5 Y = 130

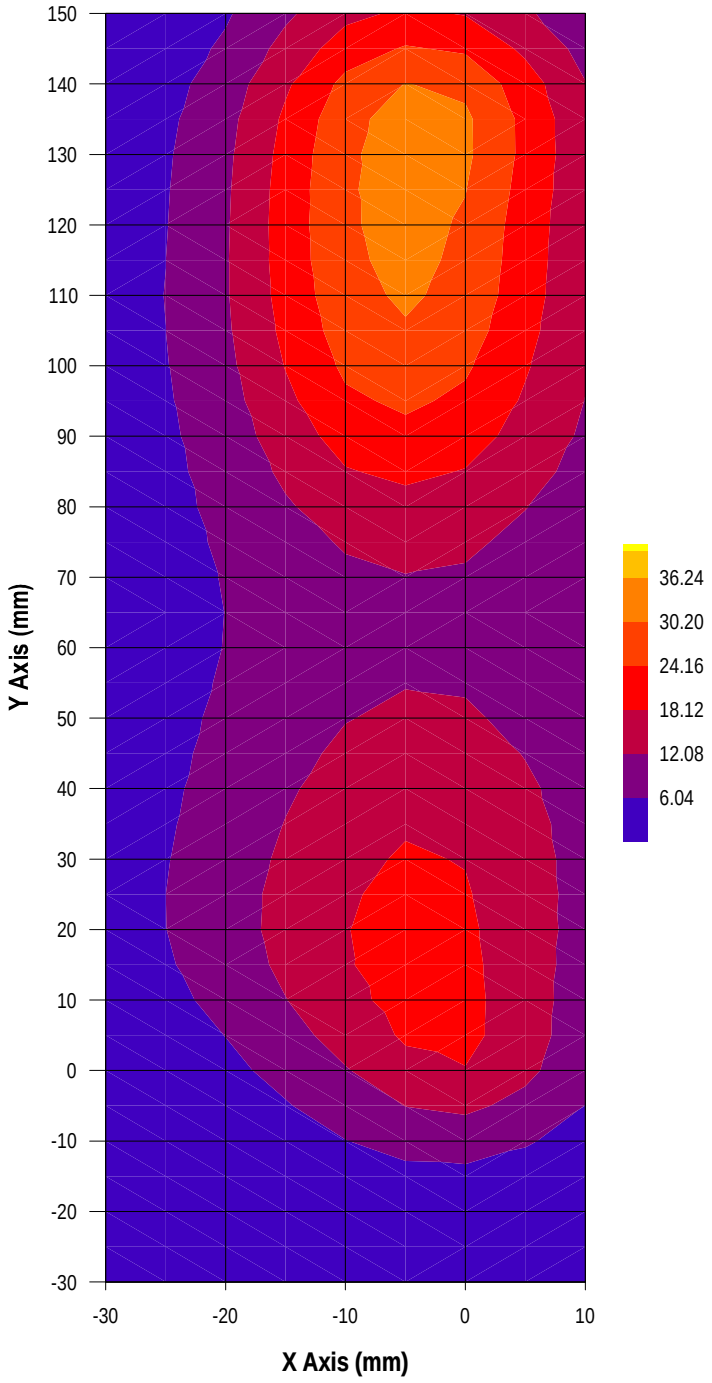
Measured Values (mV) :

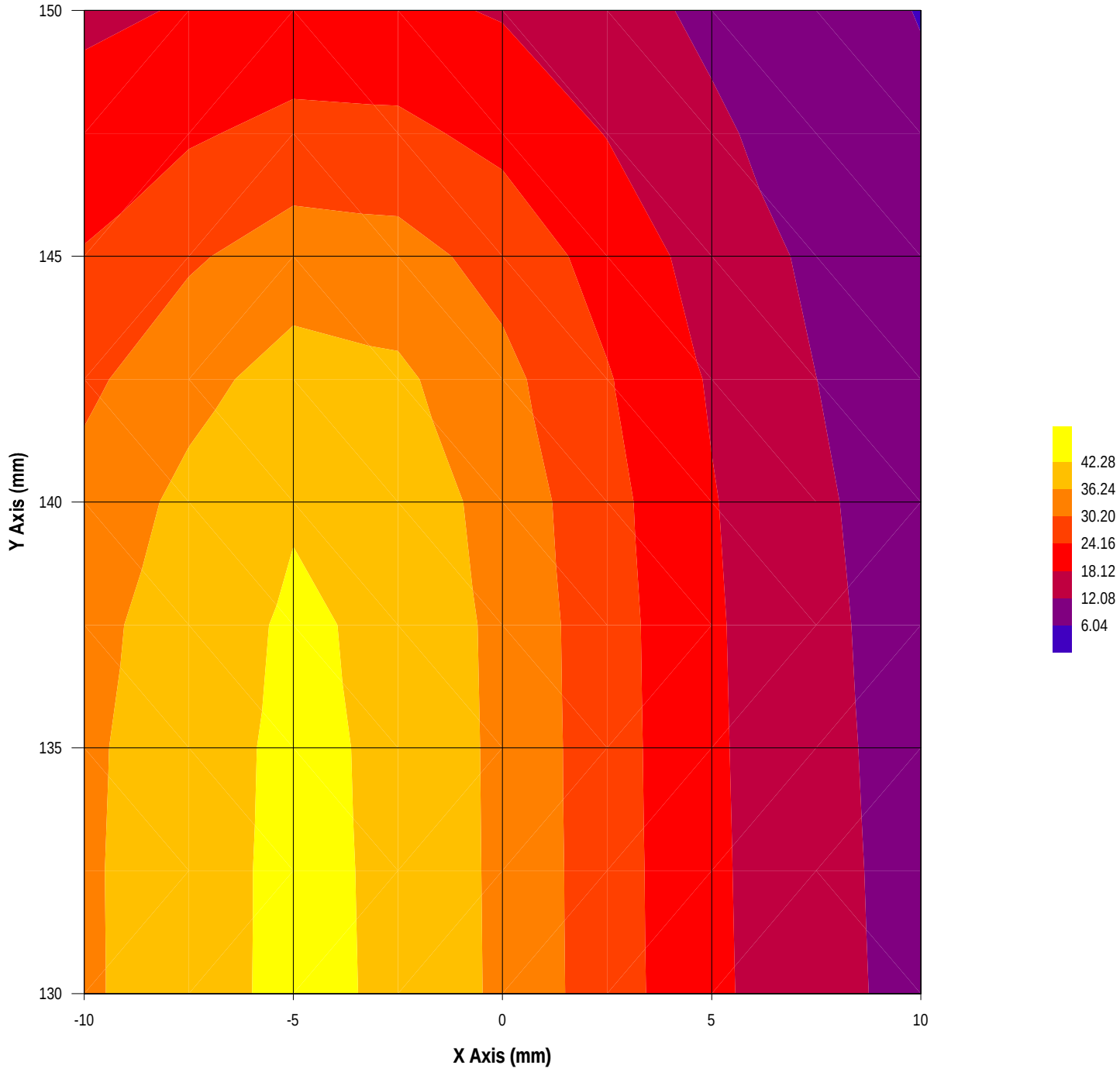
47.385	30.463	19.576	14.410	11.334	9.373
7.750	6.563	5.556	4.709	4.031	

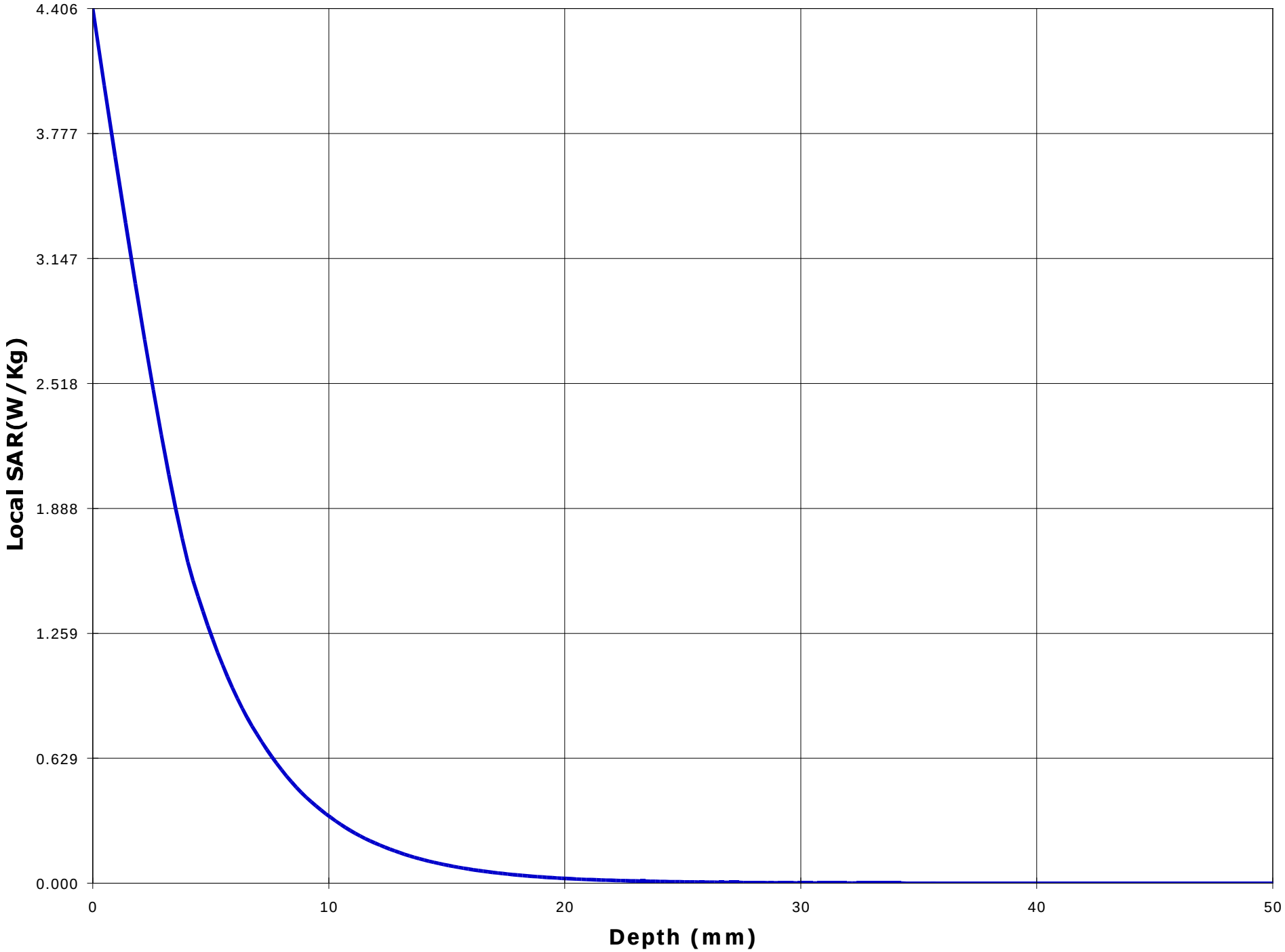
Peak Voltage (mV) : 87.384 **1 Cm Voltage (mV)** : 6.355 **SAR (W/Kg)** : 1.618

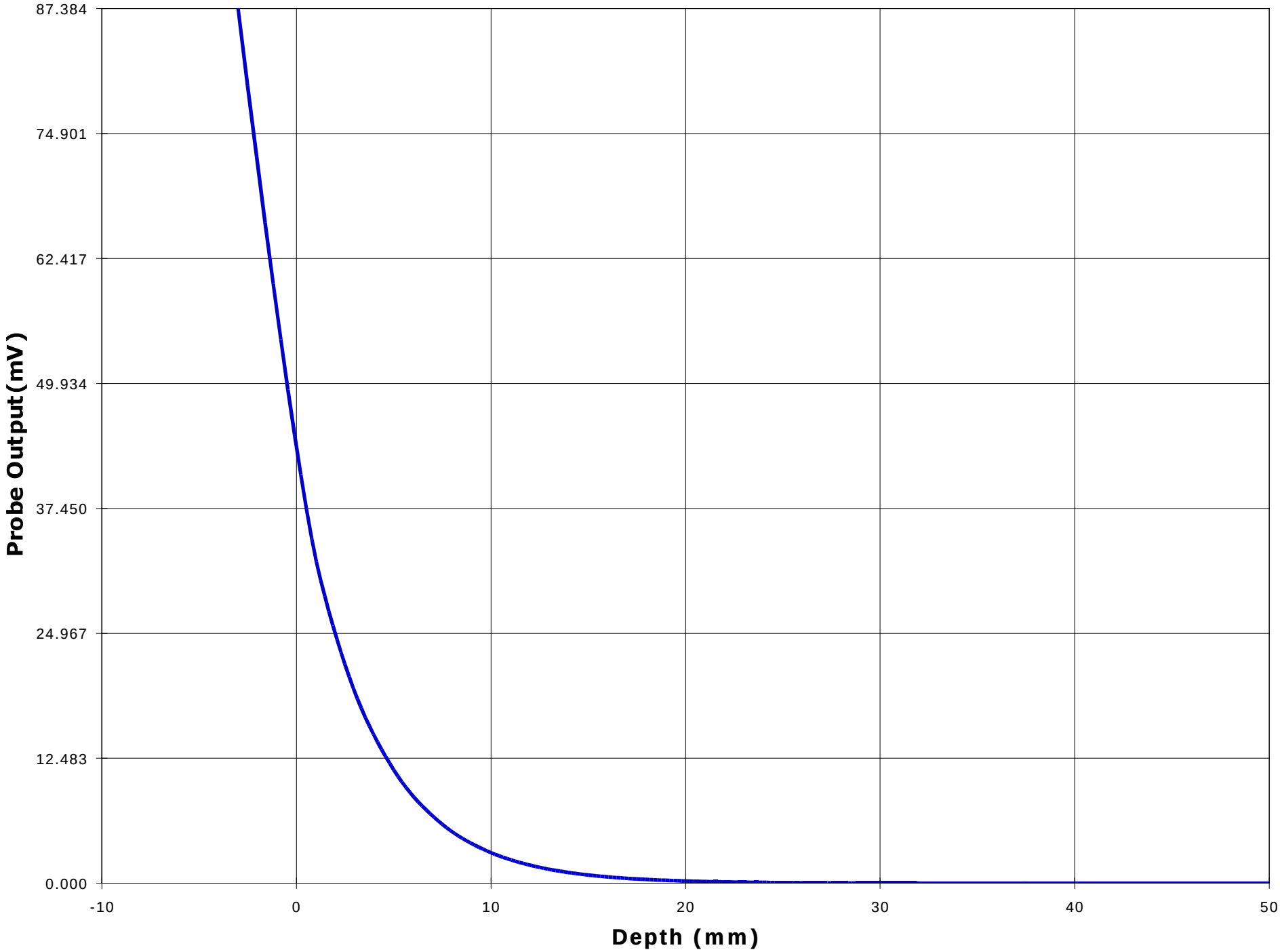

40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
-30 -20 -10 0 10
-30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
36.24
30.20
24.16
18.12
12.08
6.04


50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
-5
0
5
10
130
135
140
145
42.28
36.24
30.20
24.16
18.12
12.08
6.04


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
36.24
30.20
24.16
18.12
12.08
6.04


150
145
140
135
130
Y Axis (mm)
-10
-5
0
5
10
X Axis (mm)
42.28
36.24
30.20
24.16
18.12
12.08
6.04


4.406
3.777
3.147
2.518
1.888
1.259
0.629
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


87.384
74.901
62.417
49.934
37.450
24.967
12.483
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/16/00
Time : 9:37:12 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 136.05 N
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.94
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.055

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

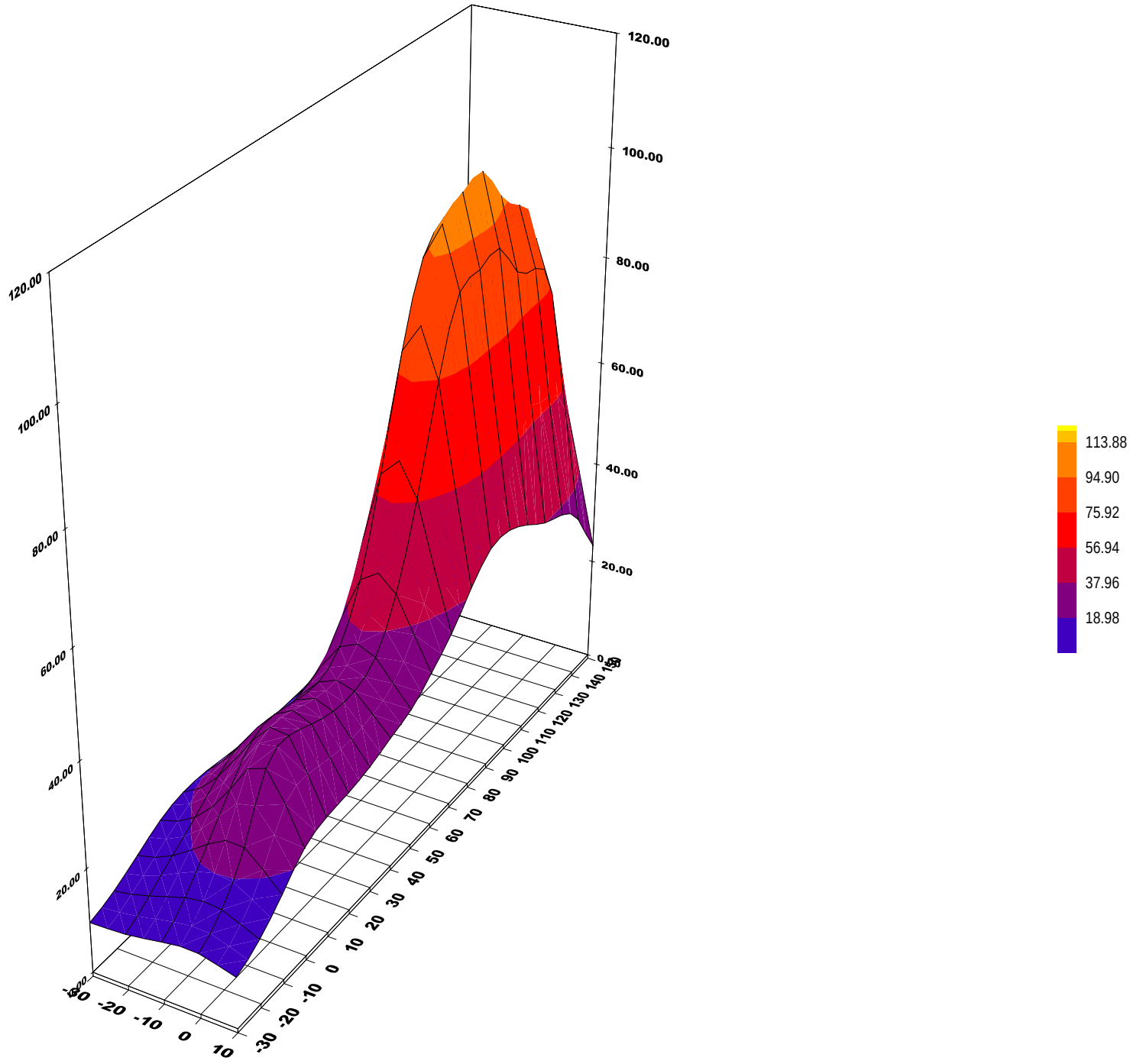
Location of Maximum Field :

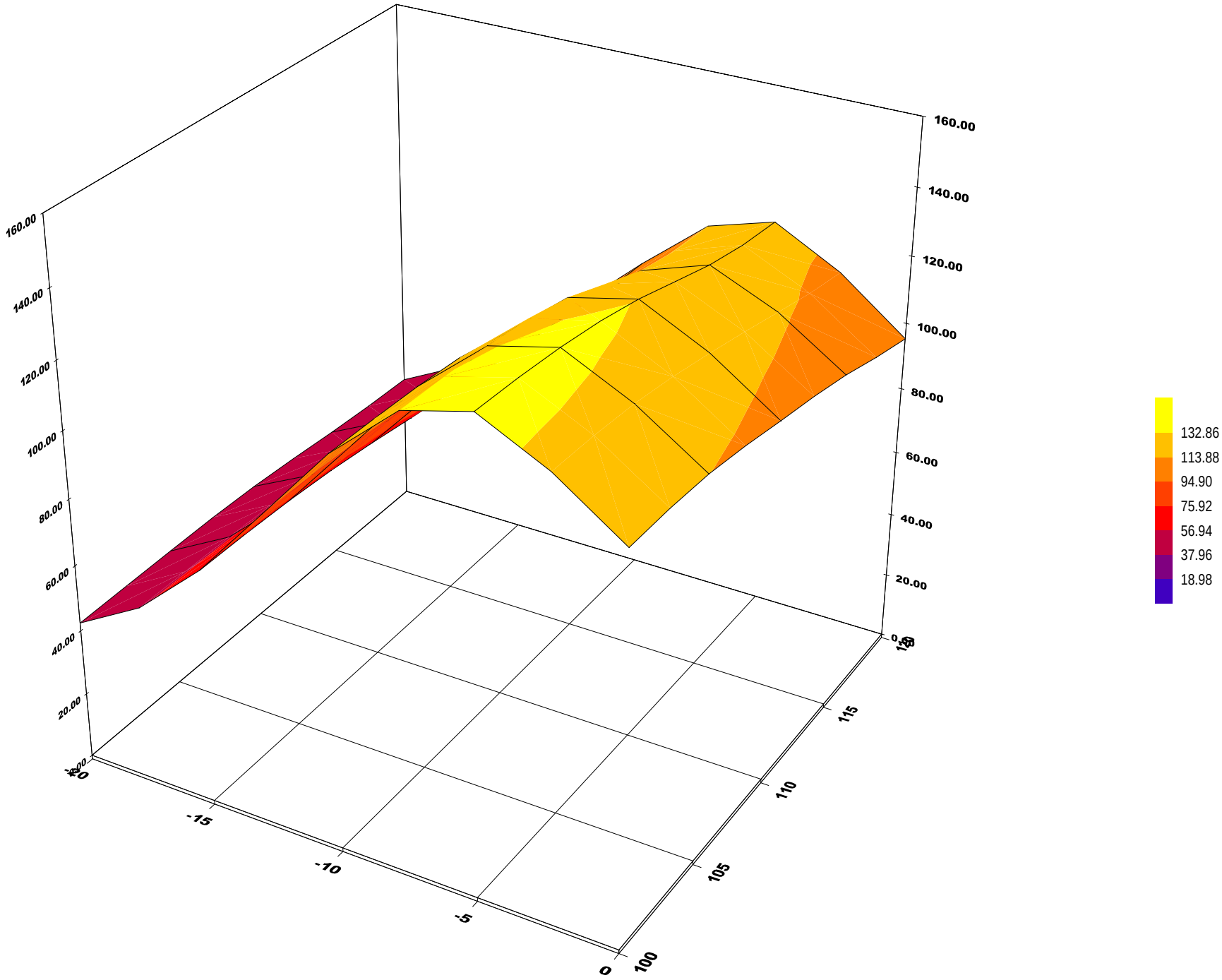
X = -5 Y = 100

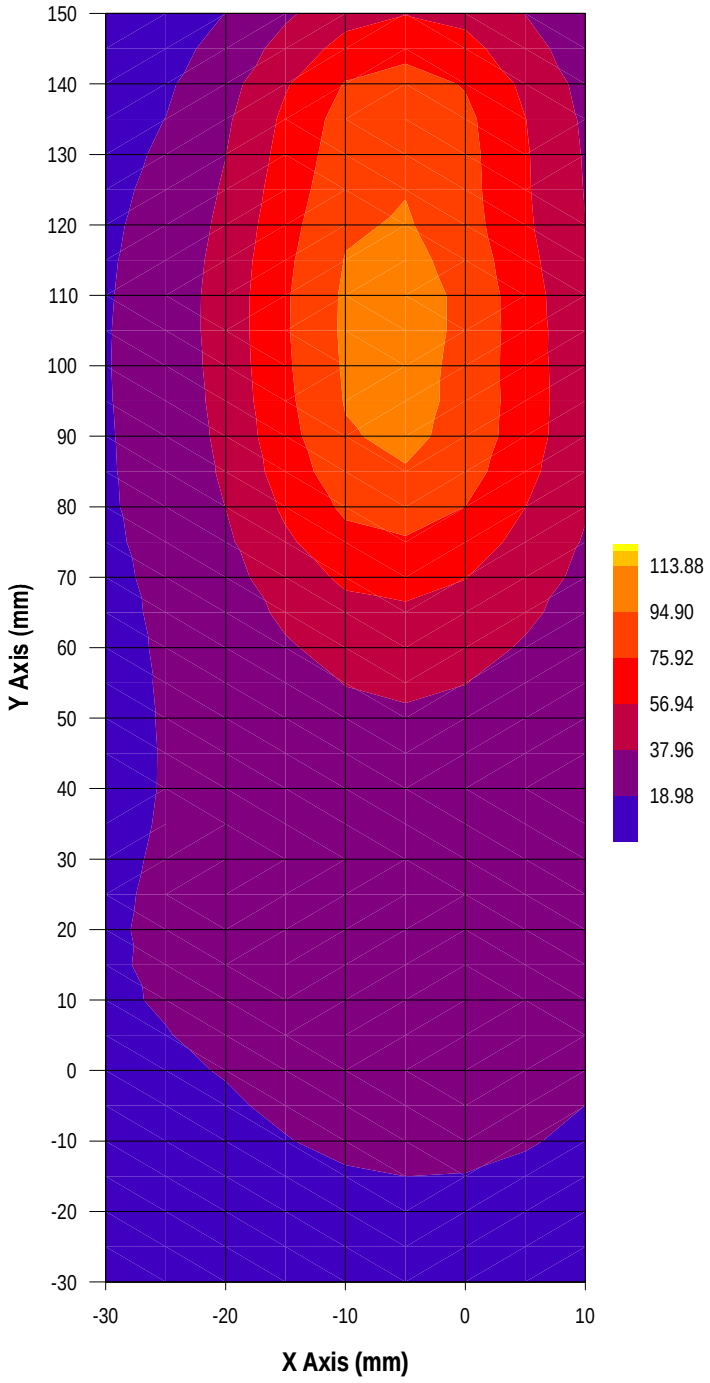
Measured Values (mV) :

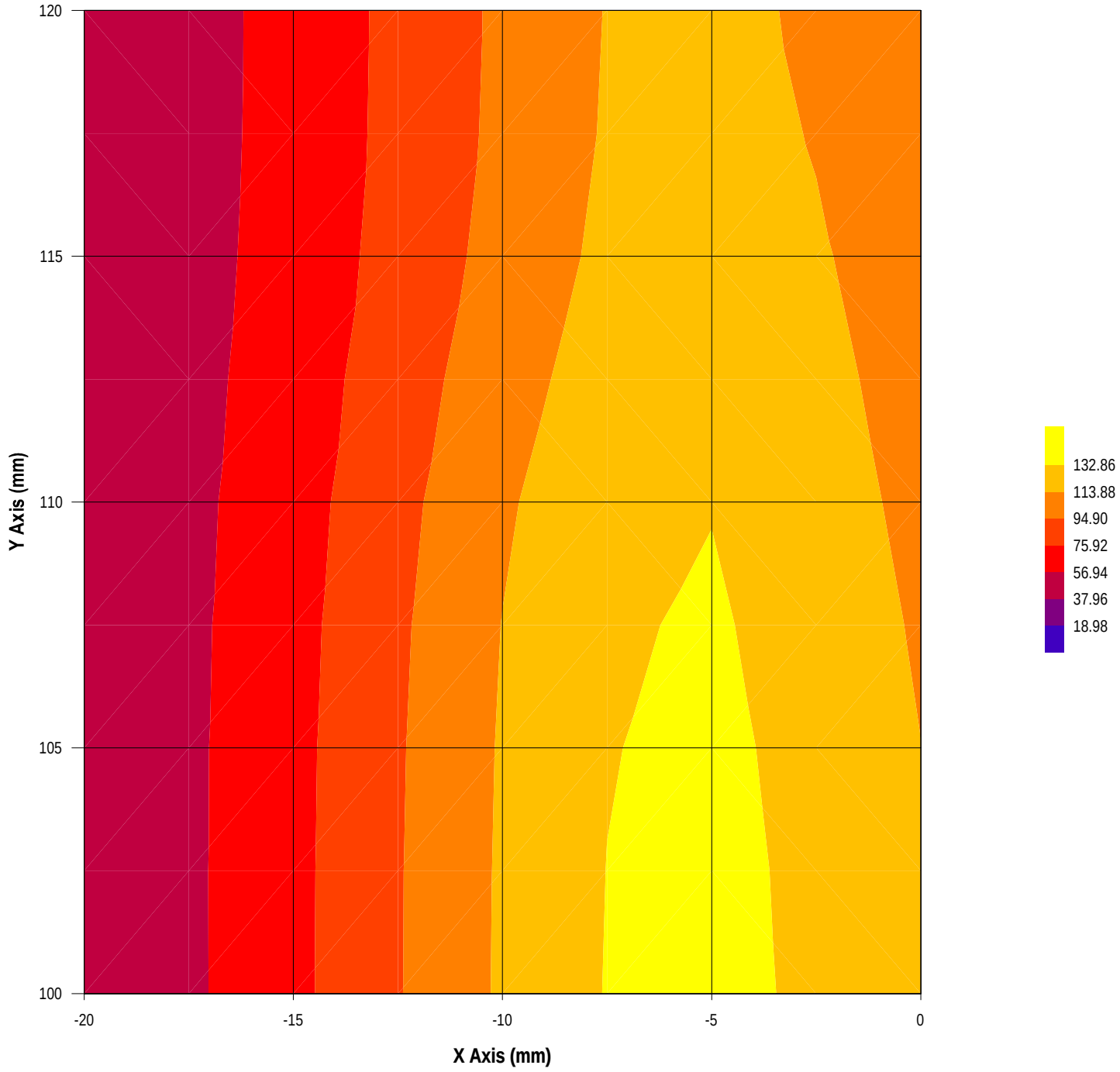
151.728	125.730	83.975	63.220	51.936	44.050
38.268	33.515	28.814	26.267	23.653	

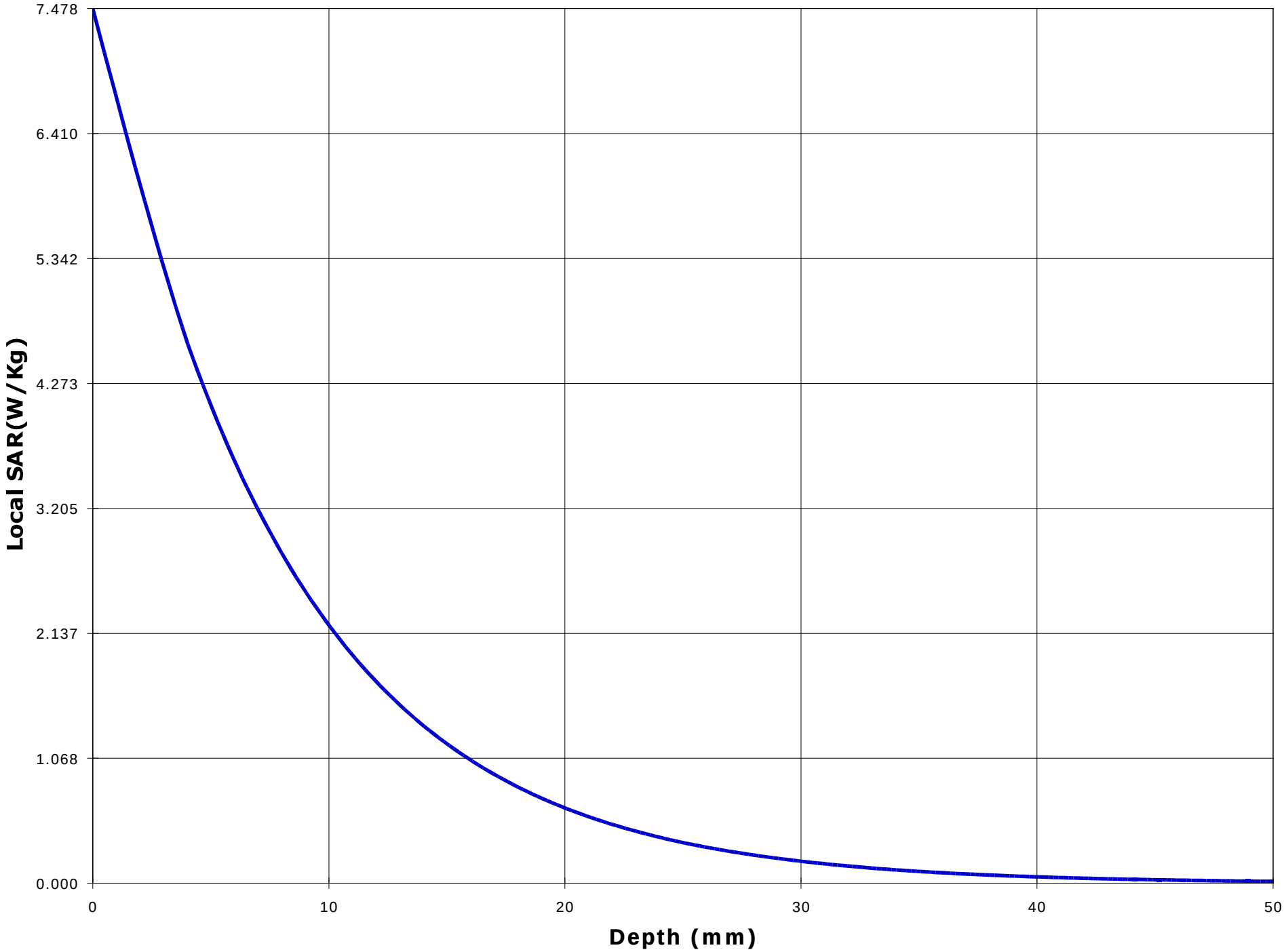
Peak Voltage (mV) : 148.304 **1 Cm Voltage (mV)** : 43.266 **SAR (W/Kg)** : 5.497

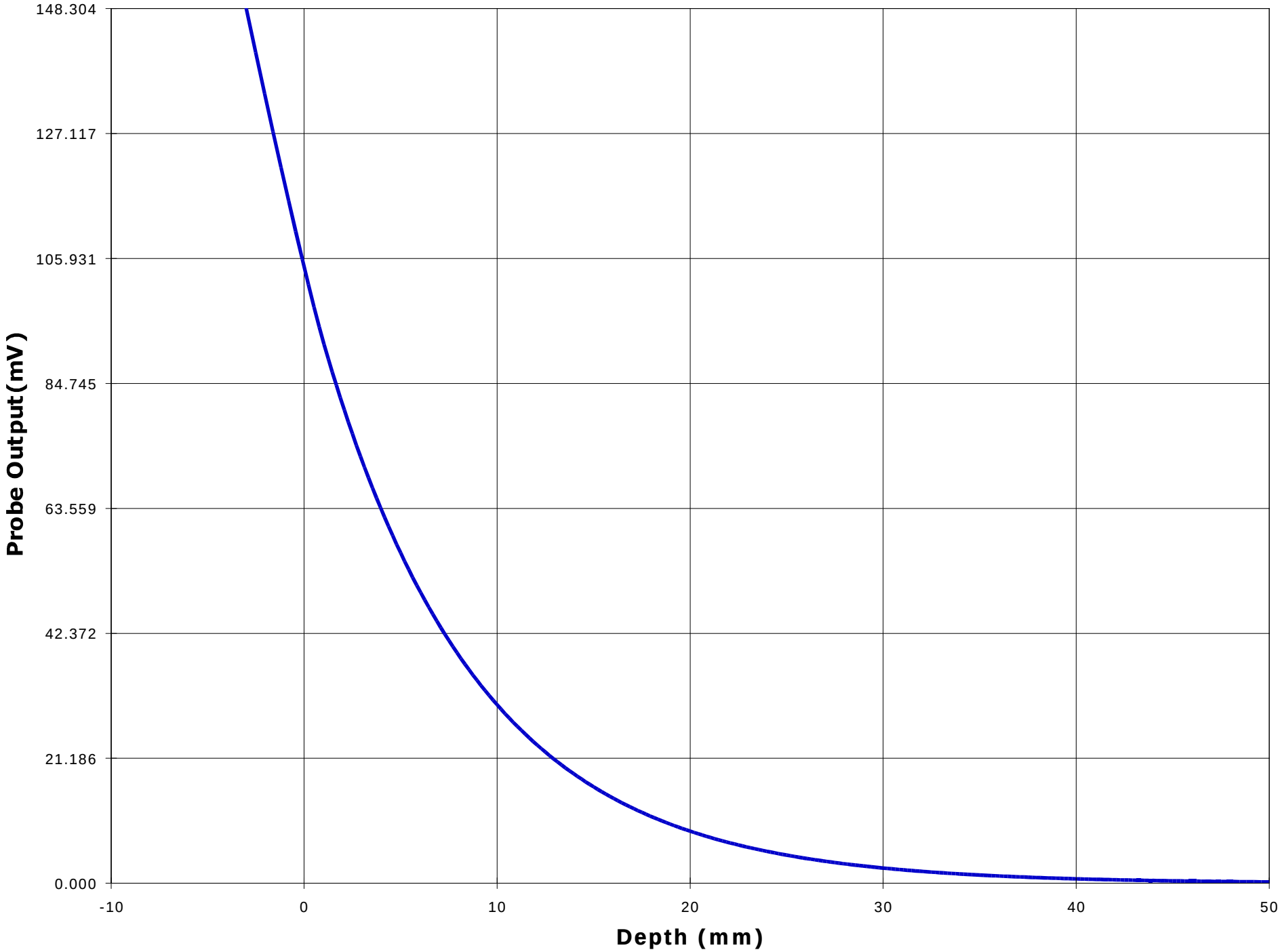

120.00
100.00
80.00
60.00
40.00
20.00
-30 -20 -10 0 10
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
113.88
94.90
75.92
56.94
37.96
18.98


160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
-20
-15
-10
-5
0
100
105
110
115
120
132.86
113.88
94.90
75.92
56.94
37.96
18.98


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
113.88
94.90
75.92
56.94
37.96
18.98


120
115
110
105
100
Y Axis (mm)
-20
-15
-10
-5
0
X Axis (mm)
132.86
113.88
94.90
75.92
56.94
37.96
18.98


7.478
6.410
5.342
4.273
3.205
2.137
1.068
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


148.304
127.117
105.931
84.745
63.559
42.372
21.186
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/16/00
Time : 8:55:07 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 155.05 N
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.80
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 4.912

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

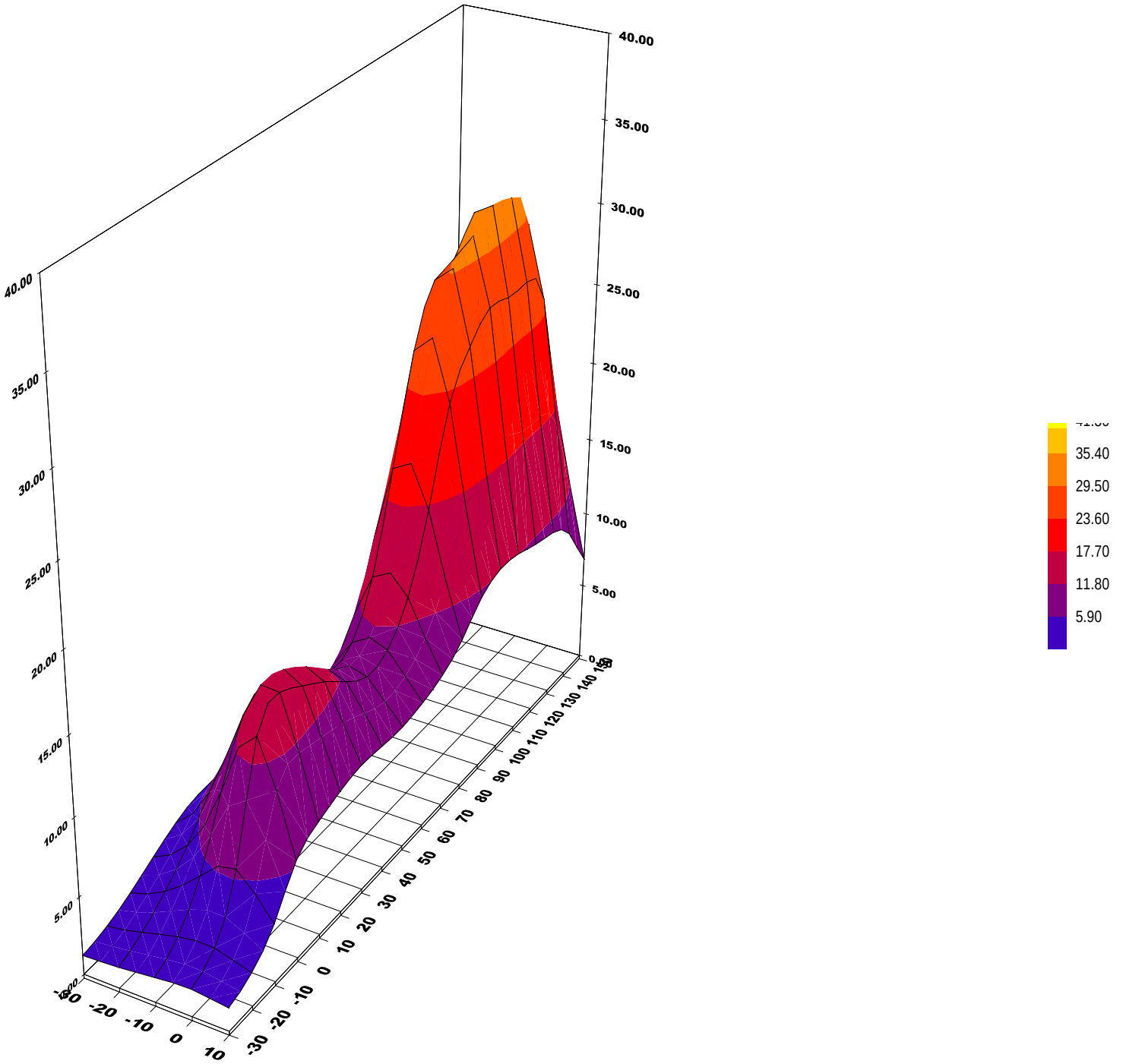
Location of Maximum Field :

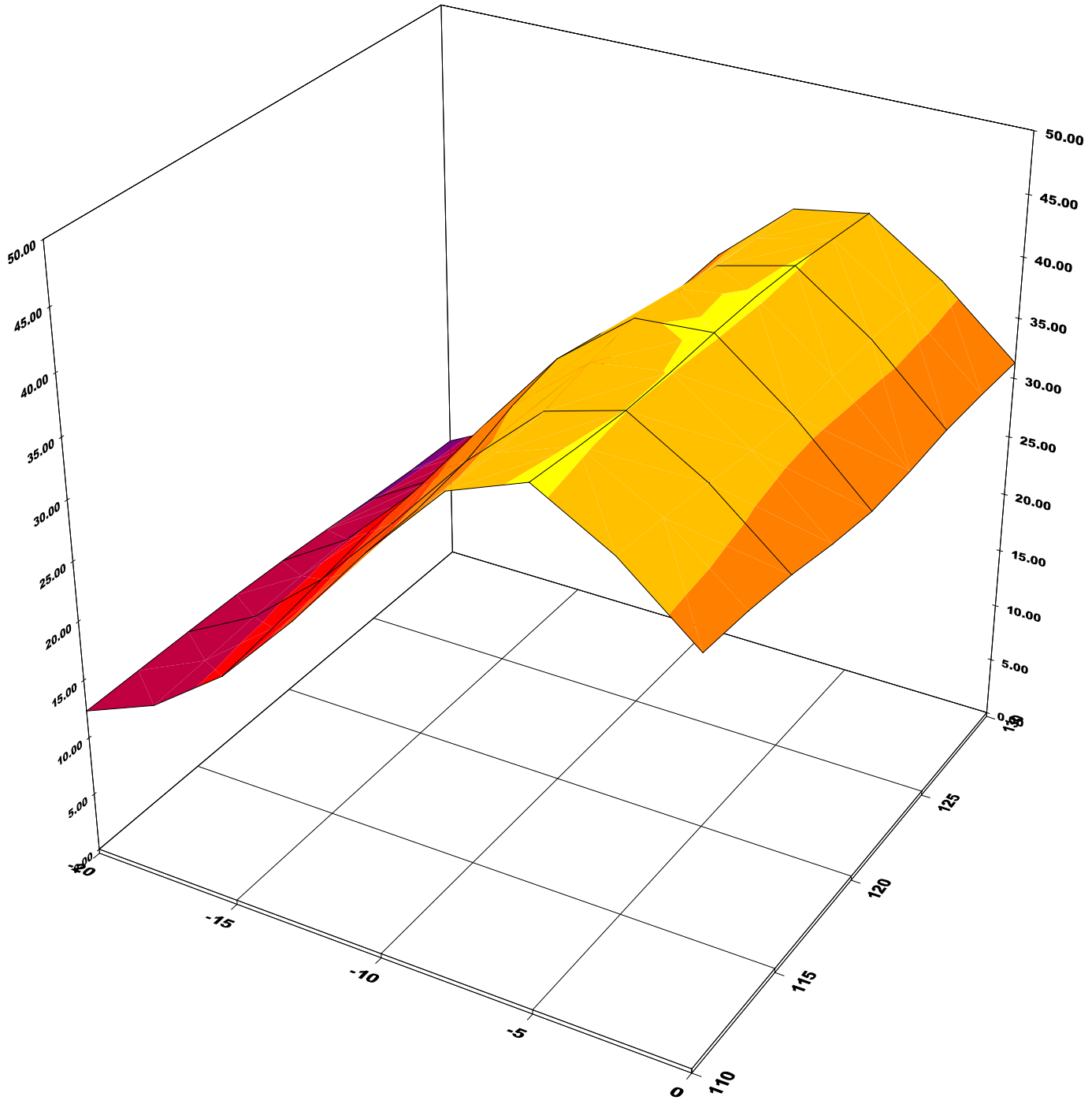
X = -5 Y = 110

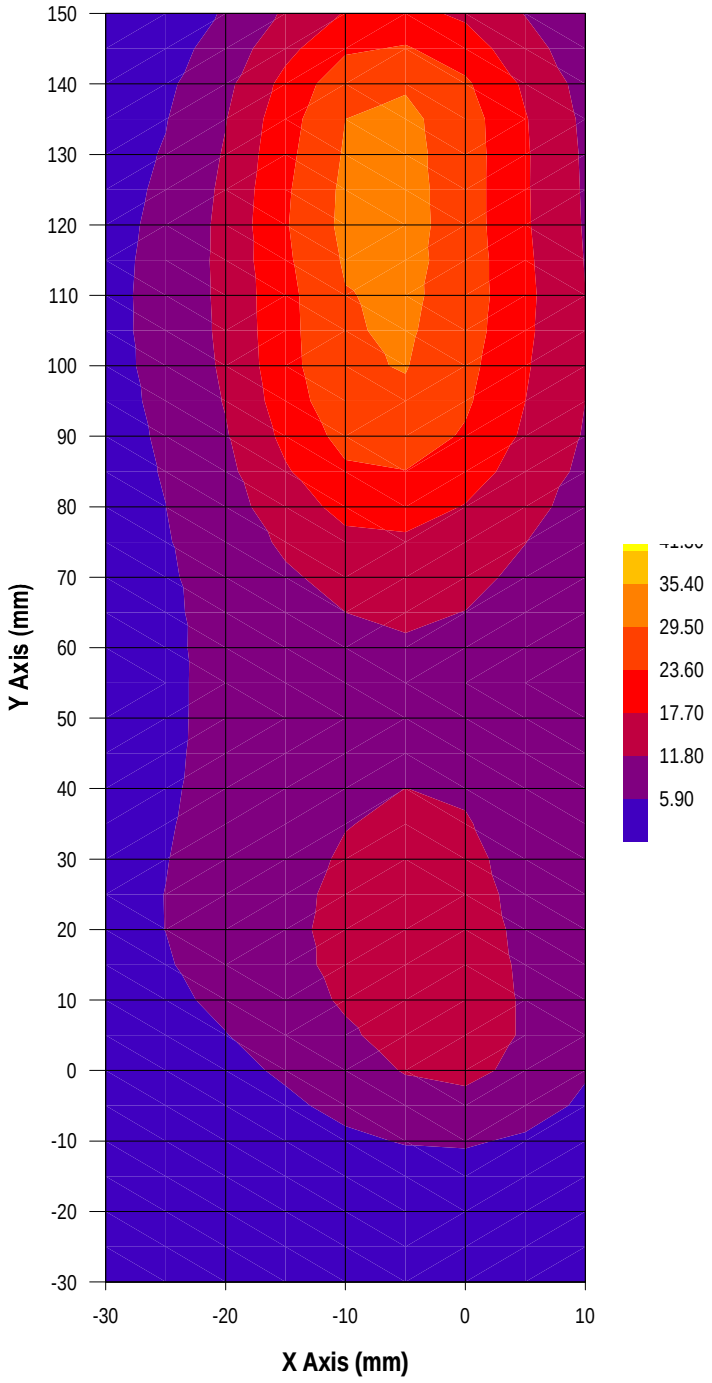
Measured Values (mV) :

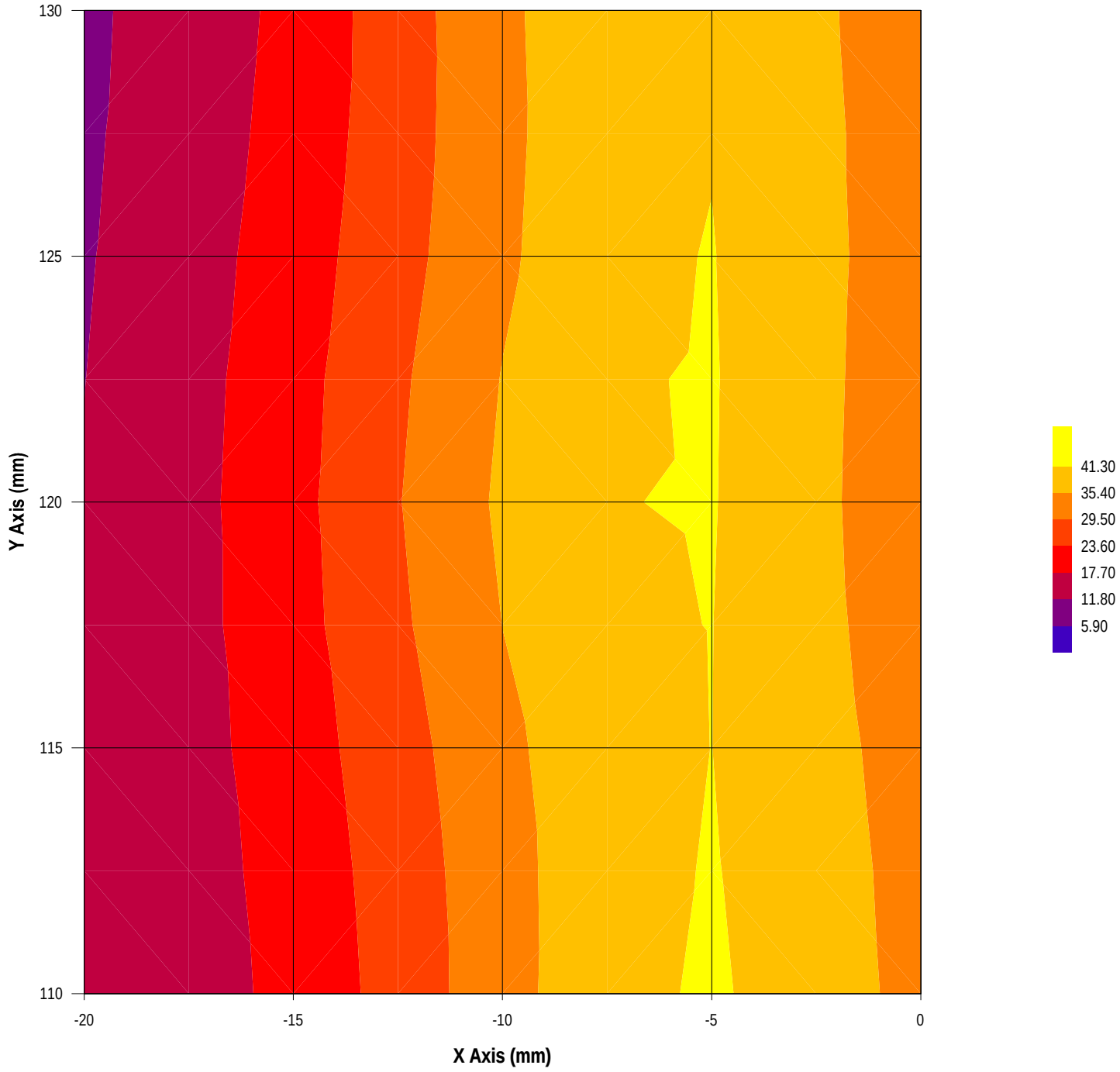
47.162	35.132	22.931	17.536	14.287	11.986
10.247	8.880	7.738	6.812	6.014	

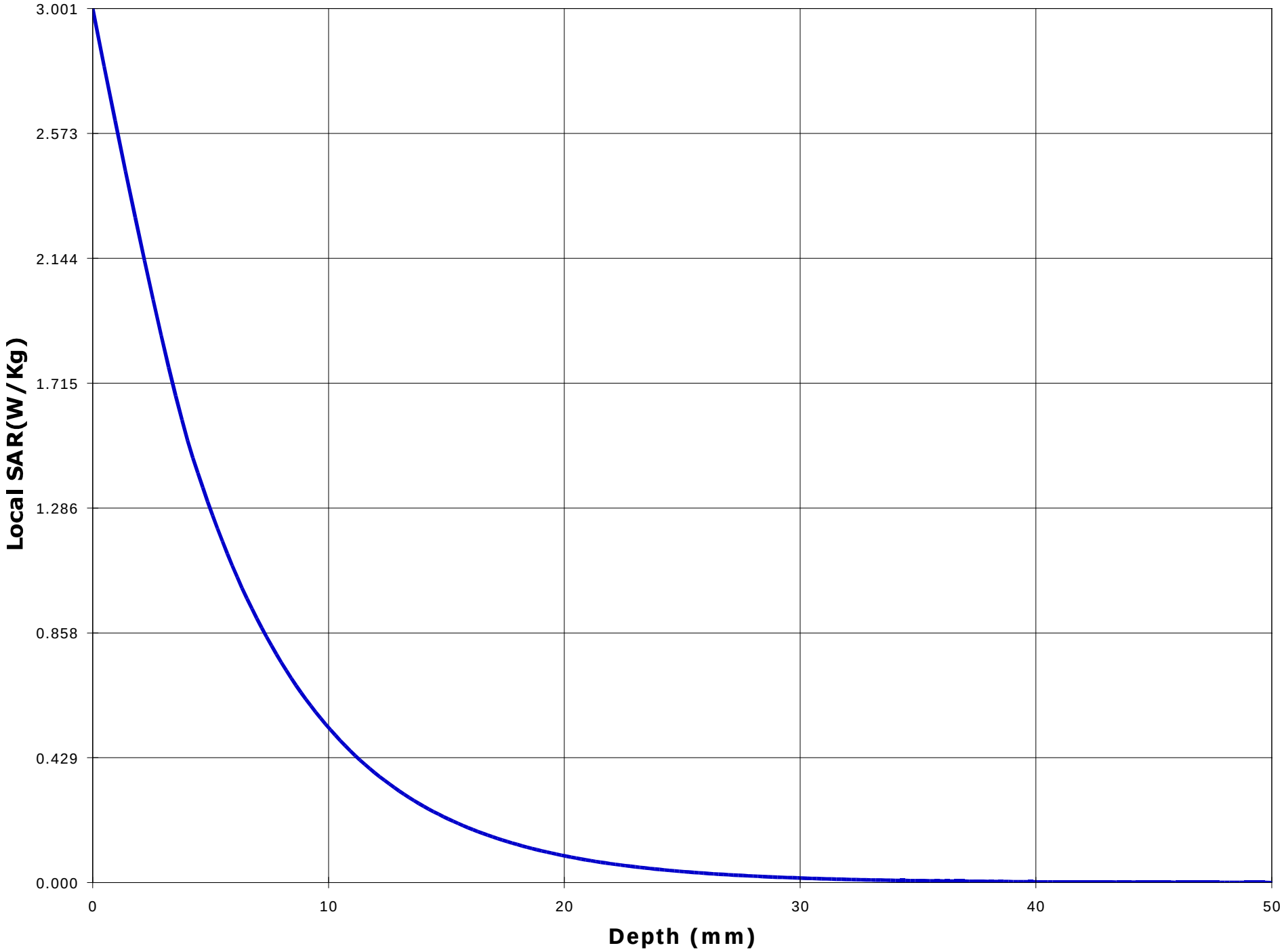
Peak Voltage (mV) : 59.520 **1 Cm Voltage (mV)** : 10.299 **SAR (W/Kg)** : 1.590

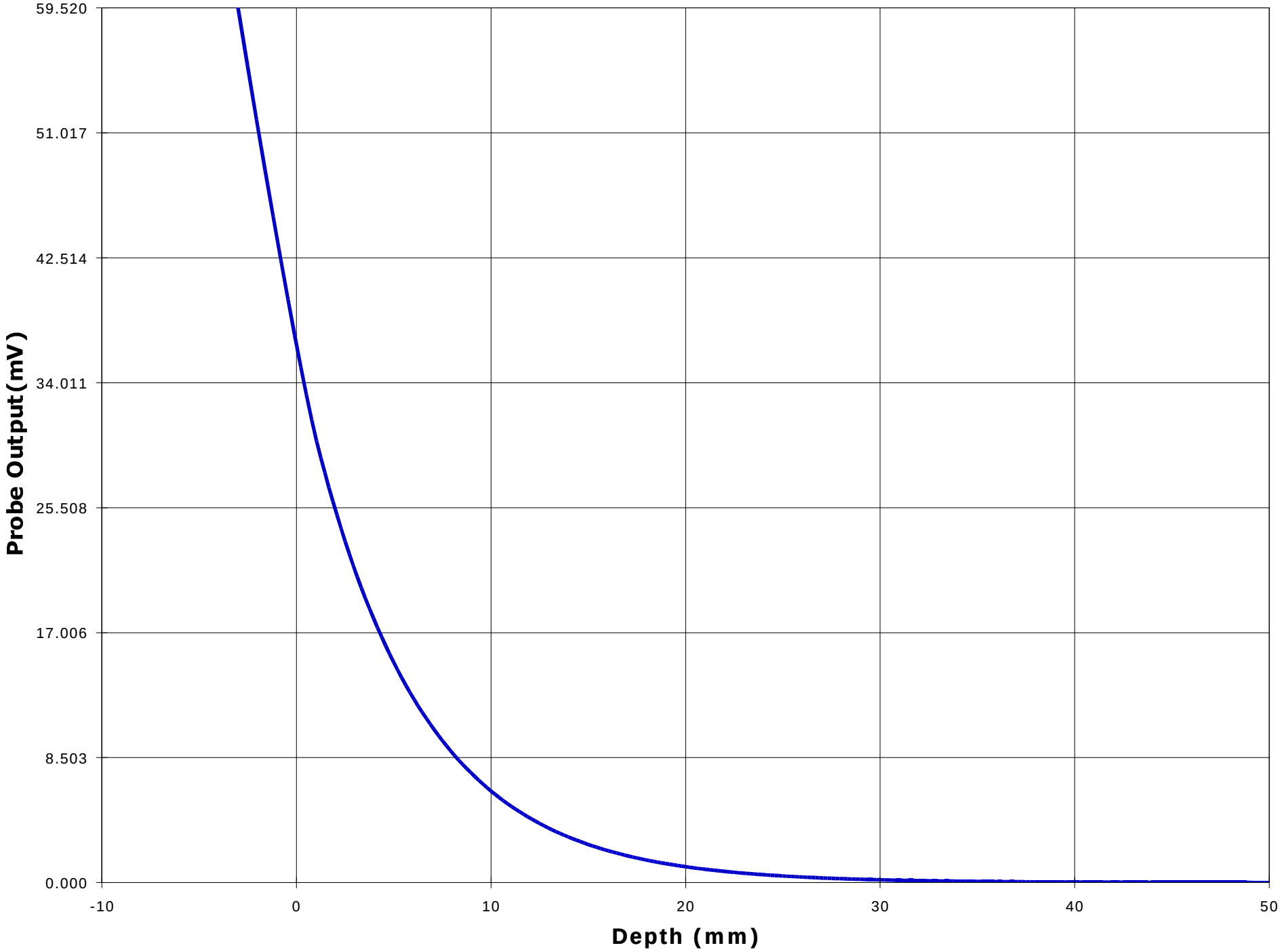

40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
-30 -20 -10 0 10
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
35.40
29.50
23.60
17.70
11.80
5.90


50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0
-15
-10
-5
110
115
120
125
41.30
35.40
29.50
23.60
17.70
11.80
5.90


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
35.40
29.50
23.60
17.70
11.80
5.90


130
125
120
115
110
Y Axis (mm)
-20
-15
-10
-5
0
X Axis (mm)
41.30
35.40
29.50
23.60
17.70
11.80
5.90


3.001
2.573
2.144
1.715
1.286
0.858
0.429
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


59.520
51.017
42.514
34.011
25.508
17.006
8.503
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/16/00
Time : 8:38:11 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 173.95 N
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.95
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.065

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

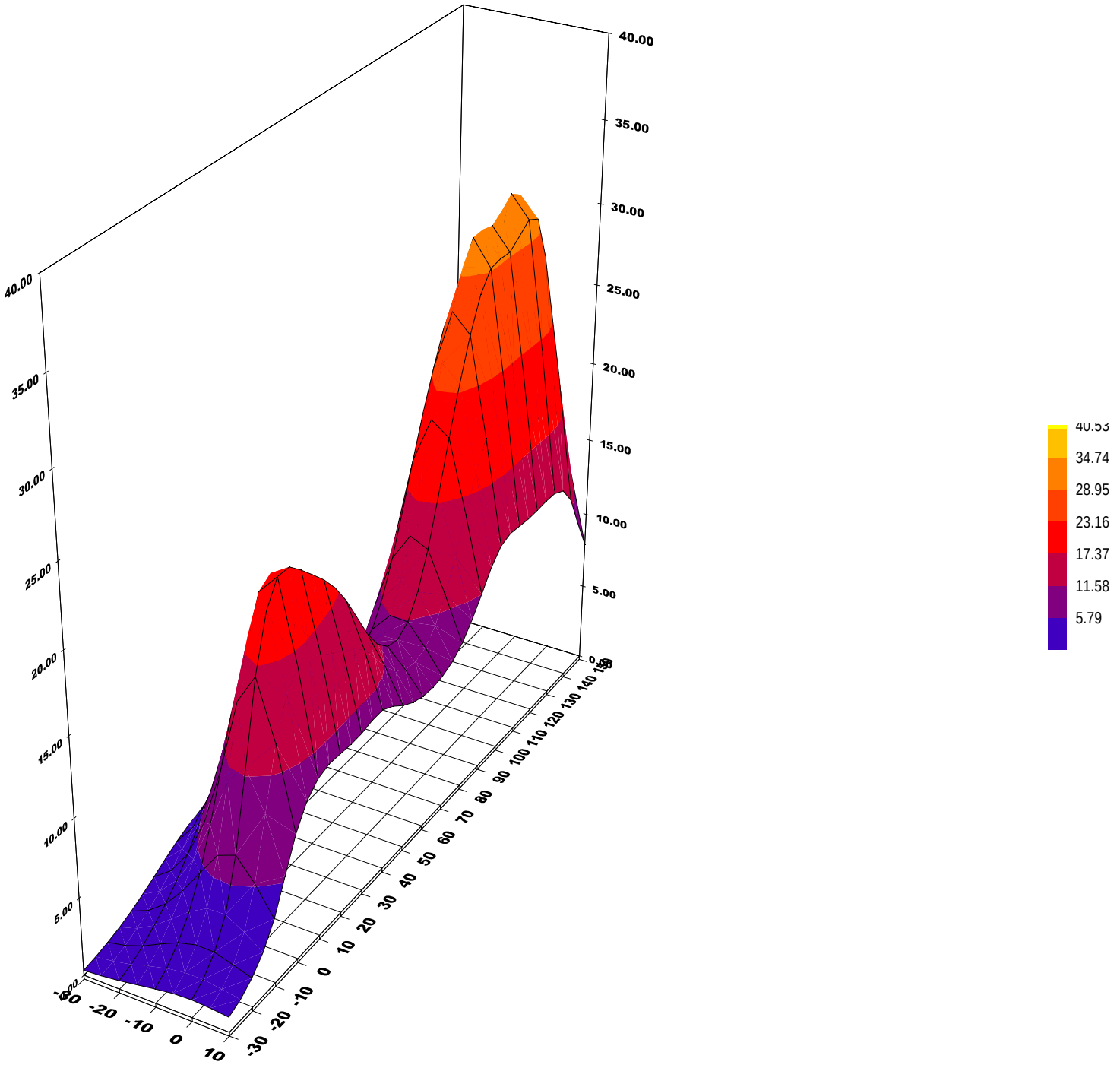
Location of Maximum Field :

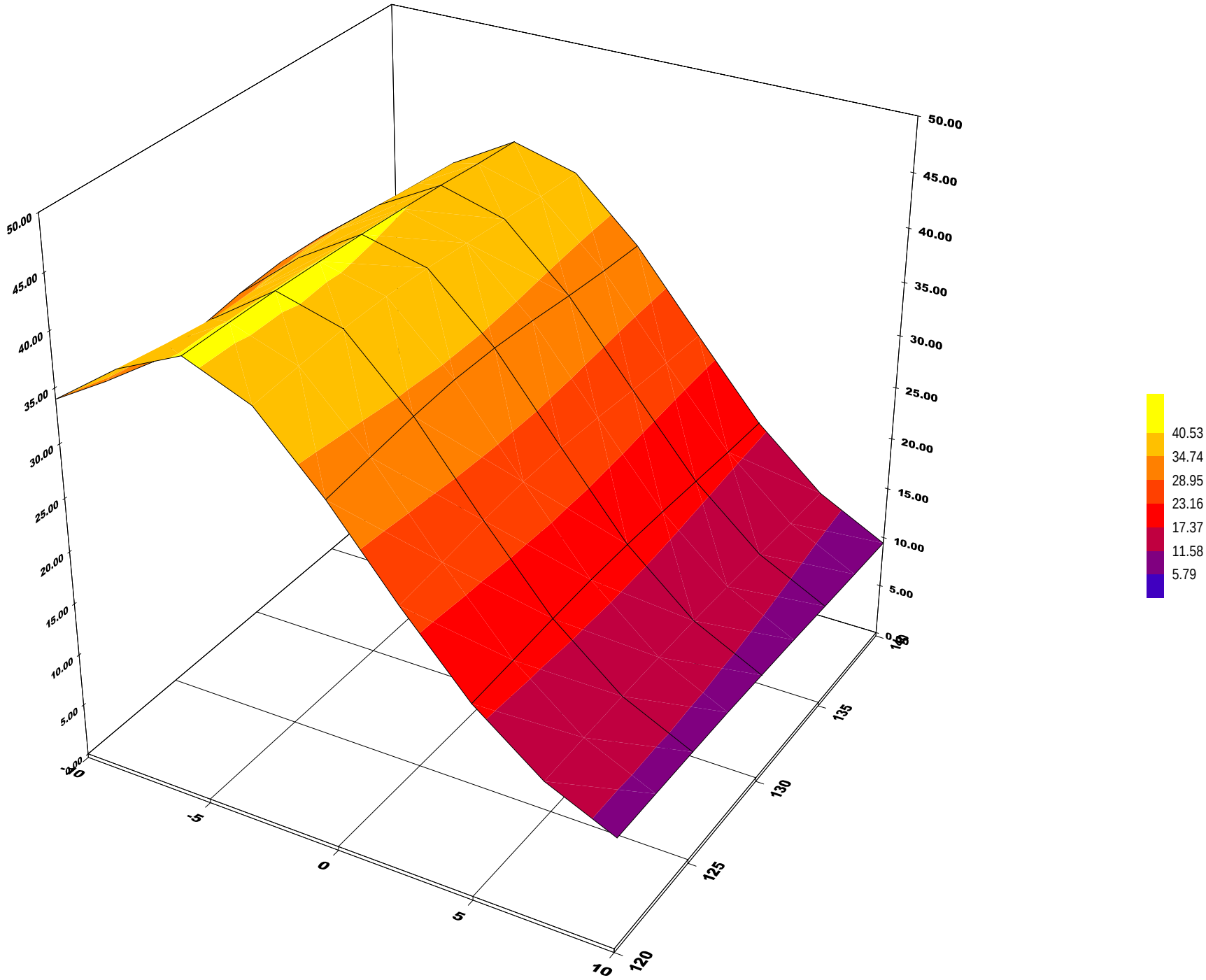
X = -5 Y = 125

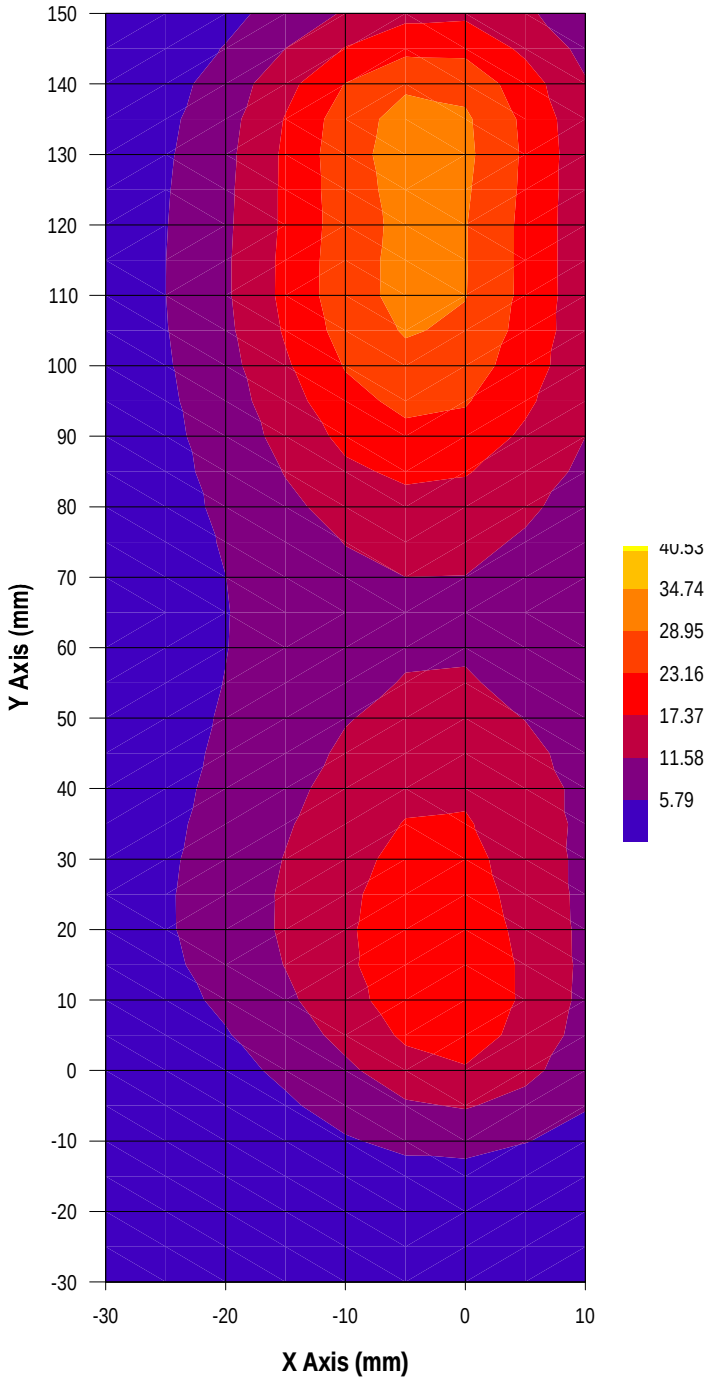
Measured Values (mV) :

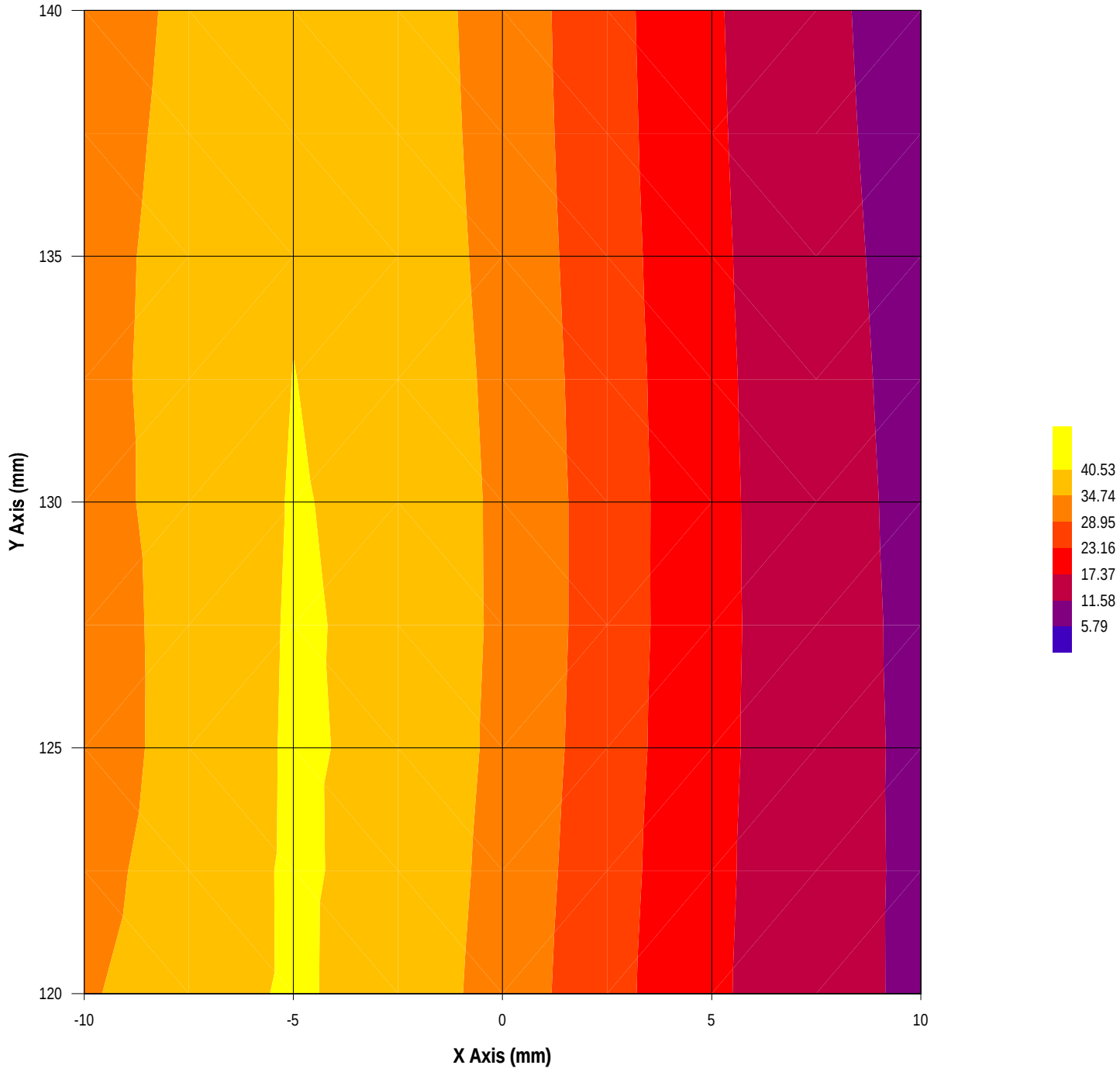
46.244	29.923	19.635	14.674	11.803	9.879
8.369	7.125	6.116	5.255	4.531	

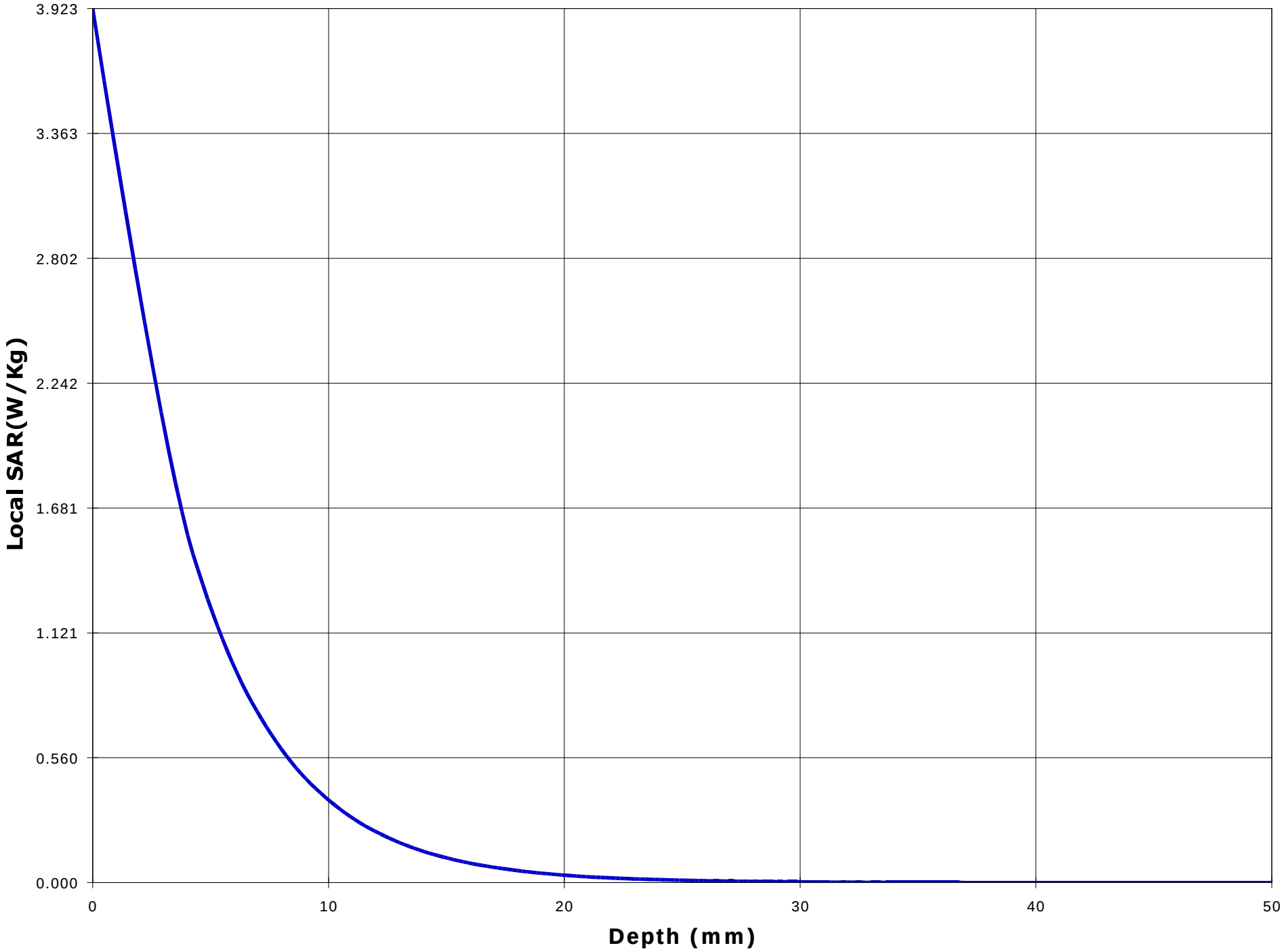
Peak Voltage (mV) : 77.798 **1 Cm Voltage (mV)** : 7.029 **SAR (W/Kg)** : 1.527

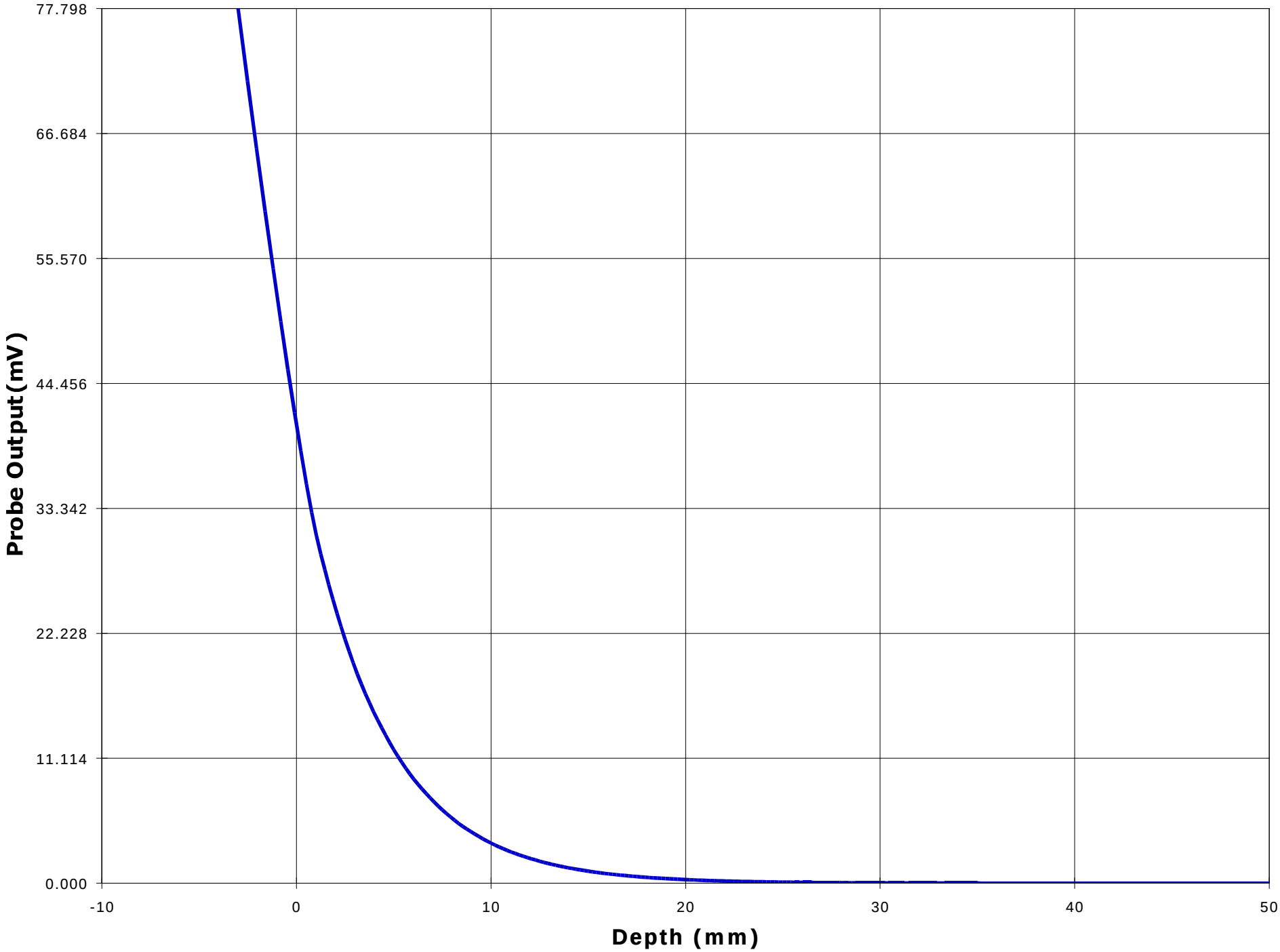

40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
-30 -20 -10 0 10
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
40.53
34.74
28.95
23.16
17.37
11.58
5.79


50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
-5
0
5
10
120
125
130
135
40.53
34.74
28.95
23.16
17.37
11.58
5.79


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
40.53
34.74
28.95
23.16
17.37
11.58
5.79


140
135
130
125
120
Y Axis (mm)
-10
-5
0
5
10
X Axis (mm)
40.53
34.74
28.95
23.16
17.37
11.58
5.79


3.923
3.363
2.802
2.242
1.681
1.121
0.560
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


77.798
66.684
55.570
44.456
33.342
22.228
11.114
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

ANNEX C: Waist SAR Measurement

Waist with the large capacity battery pack, alligator belt-clip (M/N: MB-74)
The tip of the antenna in contact with the phantom

136.05 MHz W	- 4.465 (8.930) W/Kg
155.05 MHz W	- 1.355 (2.711) W/Kg
173.95 MHz W	- 1.006 (2.012) W/Kg
136.05 MHz N	- 4.286 (8.572) W/Kg
155.05 MHz N	- 1.335 (2.671) W/Kg
173.95 MHz N	- 0.918 (1.836) W/Kg

* The SAR Measurement inside the parenthesis indicates the reading before 50 % duty factor is applied for the half-duplex type

Test Information

Date : 11/17/00
Time : 11:14:08 AM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 136.05 W
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.93
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.045

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

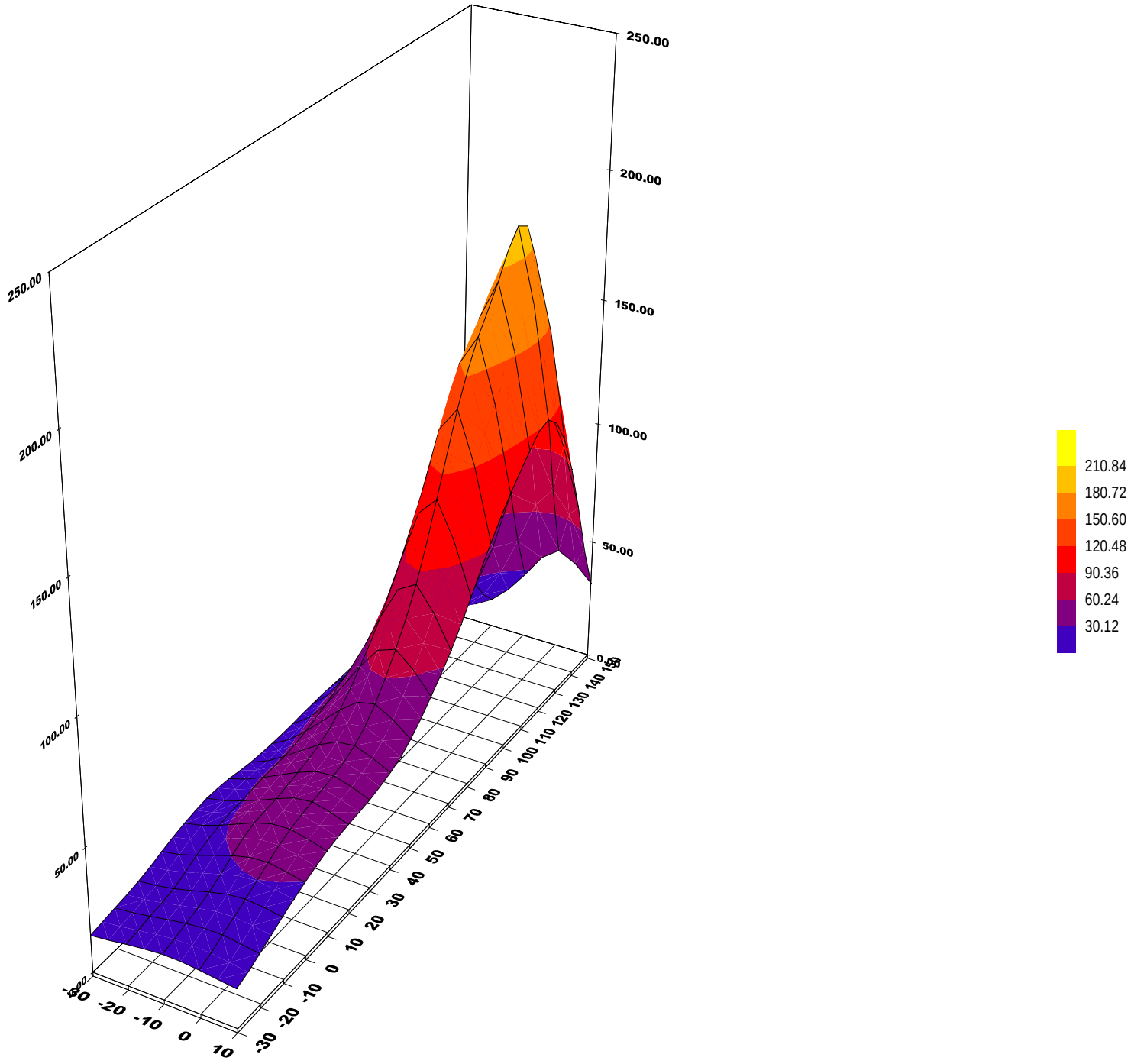
Location of Maximum Field :

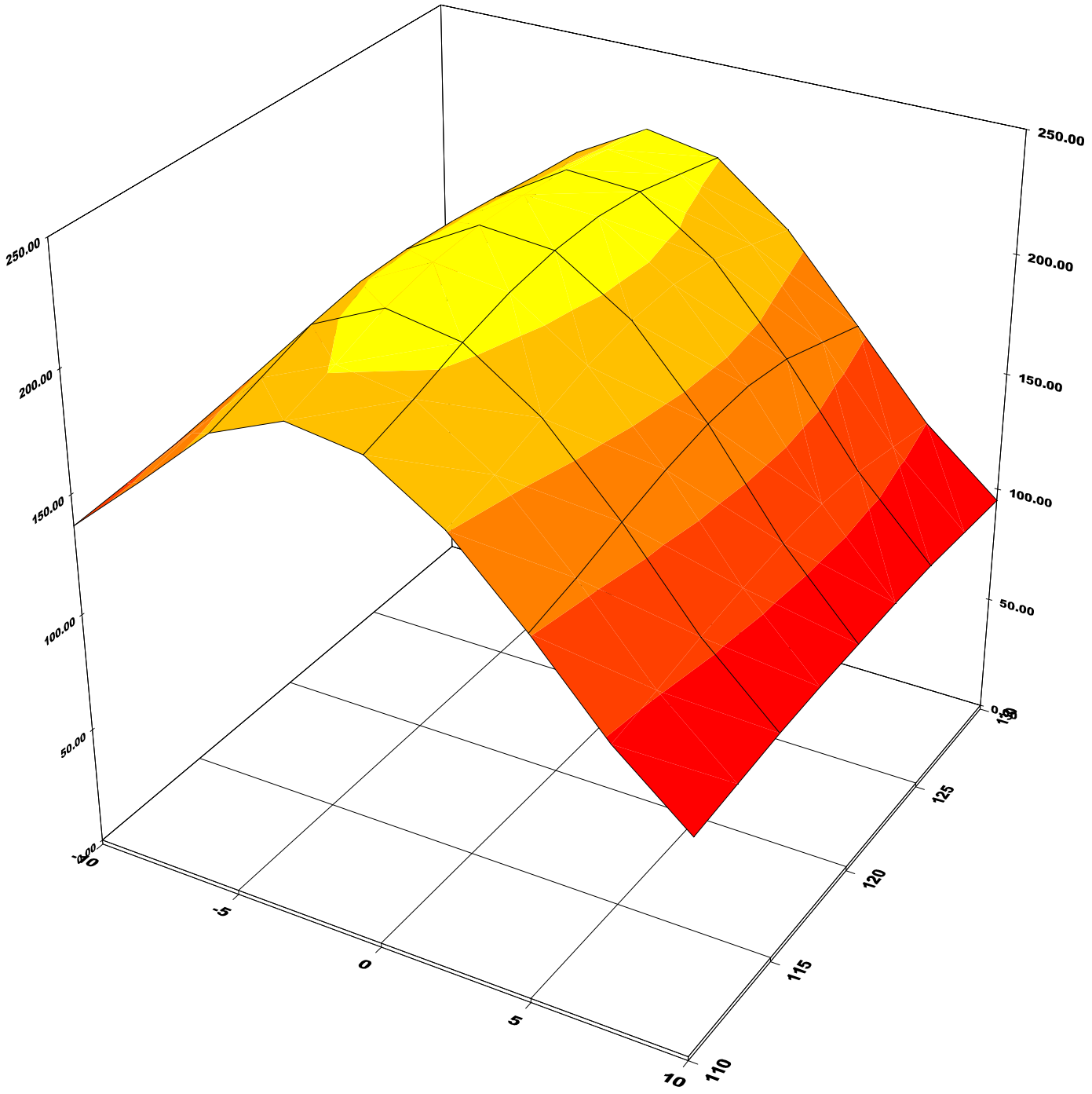
X = 0 Y = 125

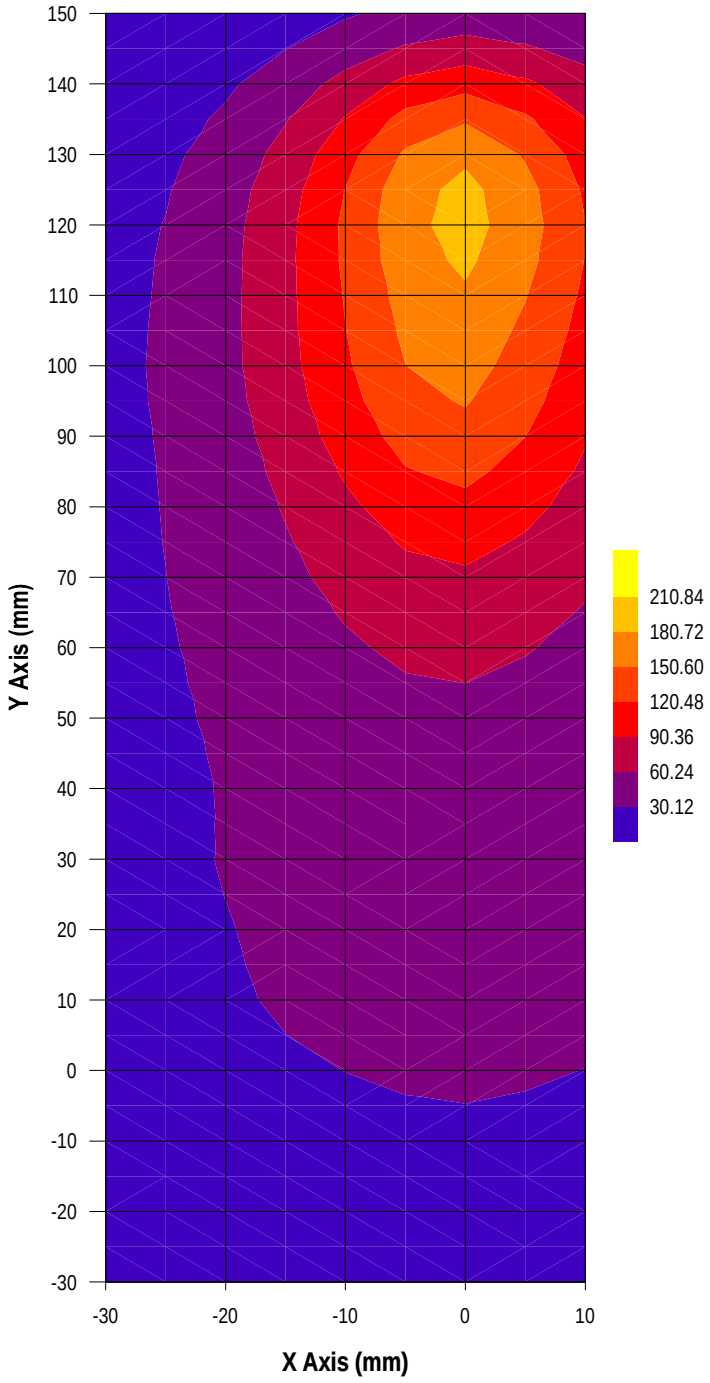
Measured Values (mV) :

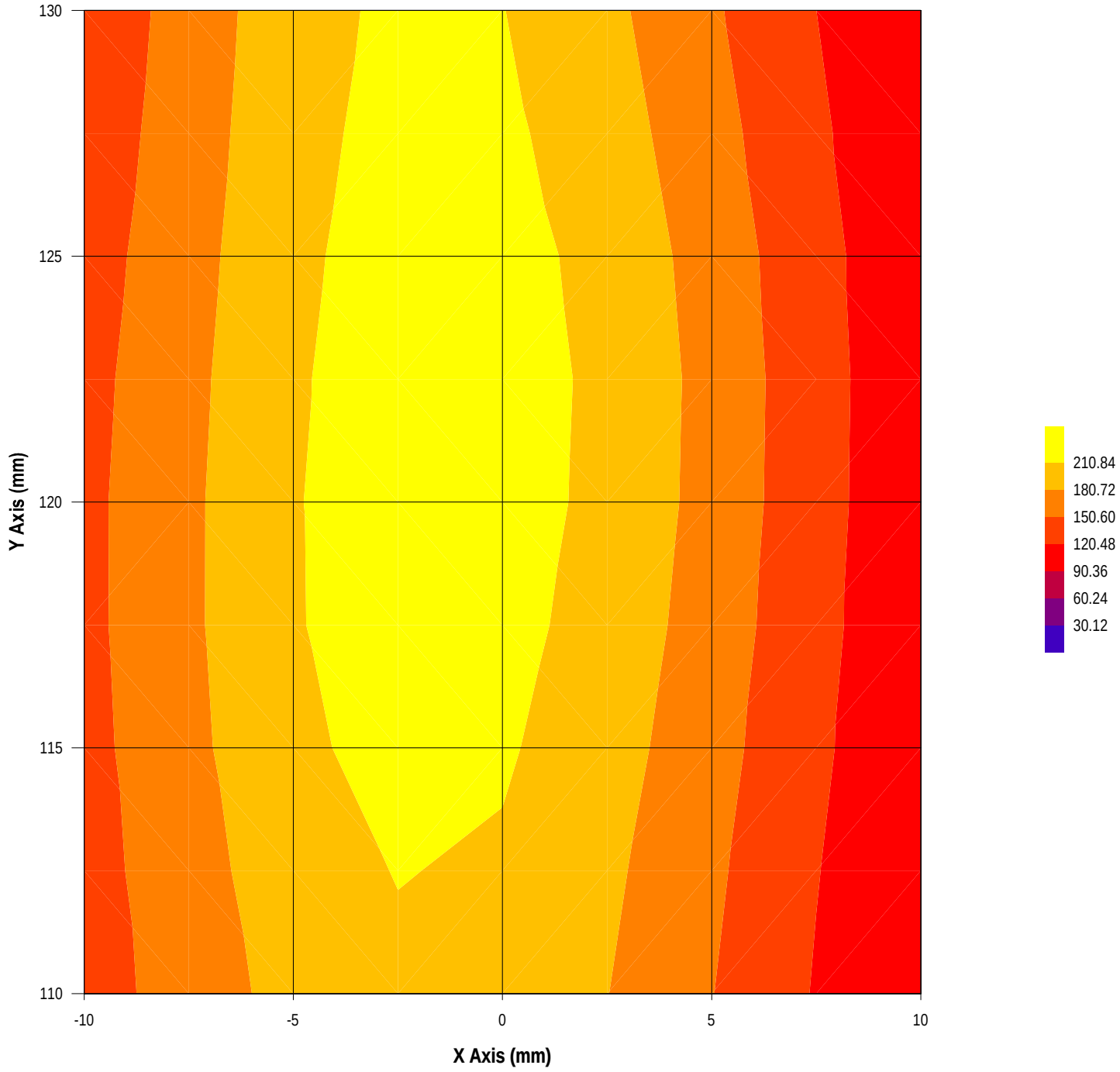
237.851	189.919	127.424	96.743	79.560	66.069
56.074	48.114	41.598	36.094	31.471	

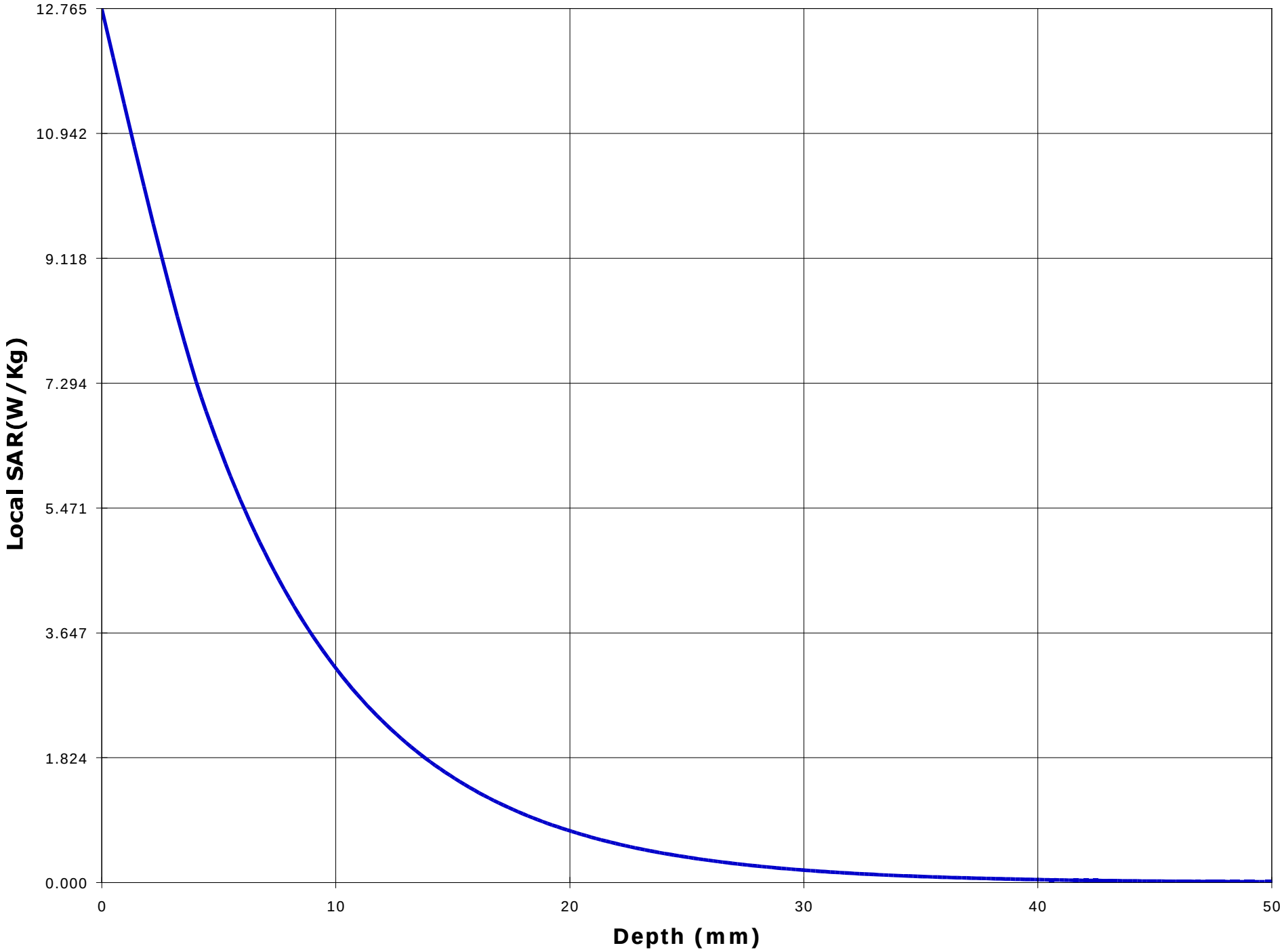
Peak Voltage (mV) : 253.151 **1 Cm Voltage (mV)** : 61.134 **SAR (W/Kg)** : 8.930

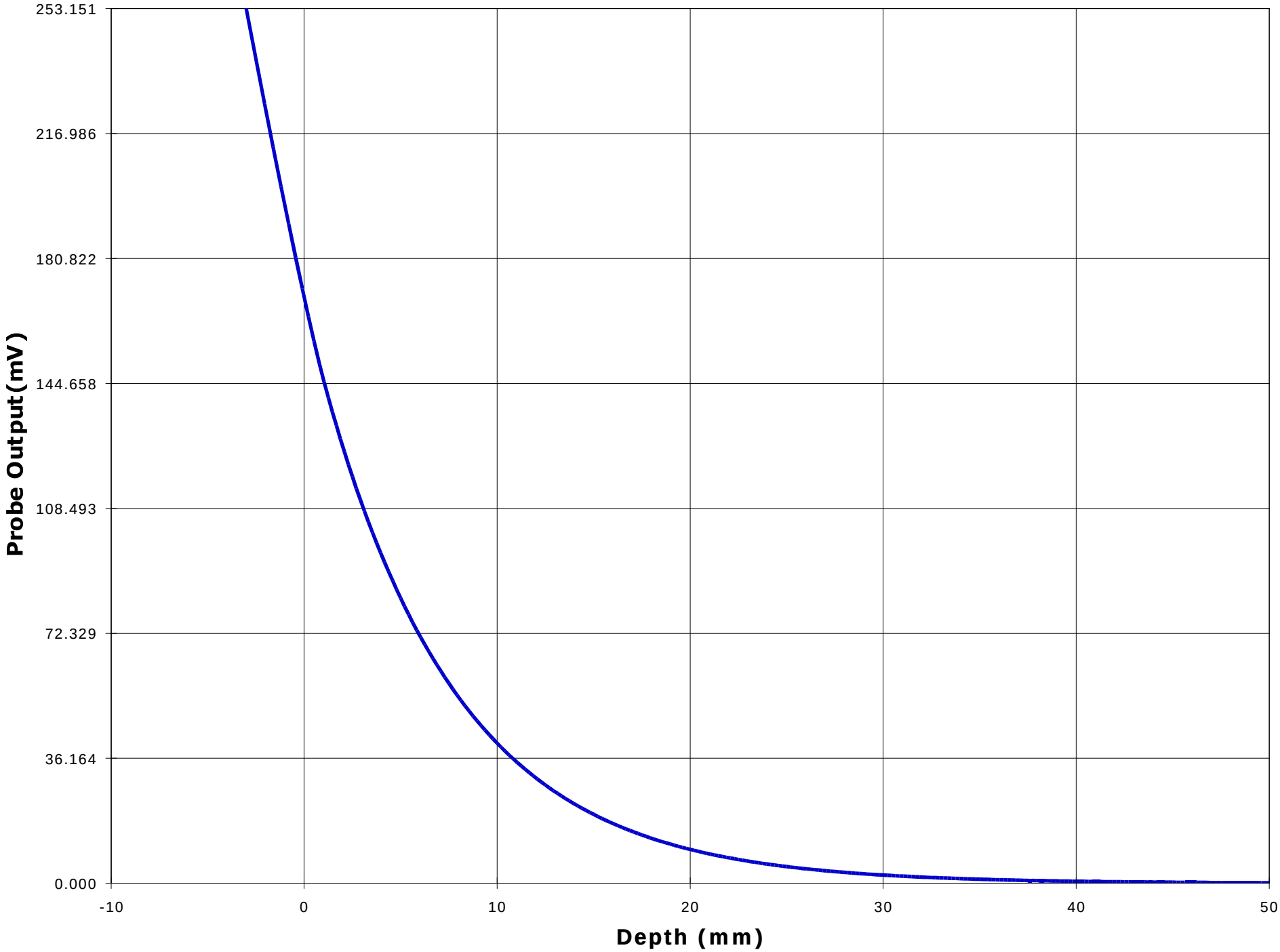

250.00
200.00
150.00
100.00
50.00
-30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
210.84
180.72
150.60
120.48
90.36
60.24
30.12


250.00
200.00
150.00
100.00
50.00
250.00
200.00
150.00
100.00
50.00
0
5
0
5
10
110
115
120
125
210.84
180.72
150.60
120.48
90.36
60.24
30.12


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
210.84
180.72
150.60
120.48
90.36
60.24
30.12


130
125
120
115
110
Y Axis (mm)
-10
-5
0
5
10
X Axis (mm)
210.84
180.72
150.60
120.48
90.36
60.24
30.12


12.765
10.942
9.118
7.294
5.471
3.647
1.824
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


253.151
216.986
180.822
144.658
108.493
72.329
36.164
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/17/00
Time : 11:47:08 AM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 155.05 W
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.75
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 4.861

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

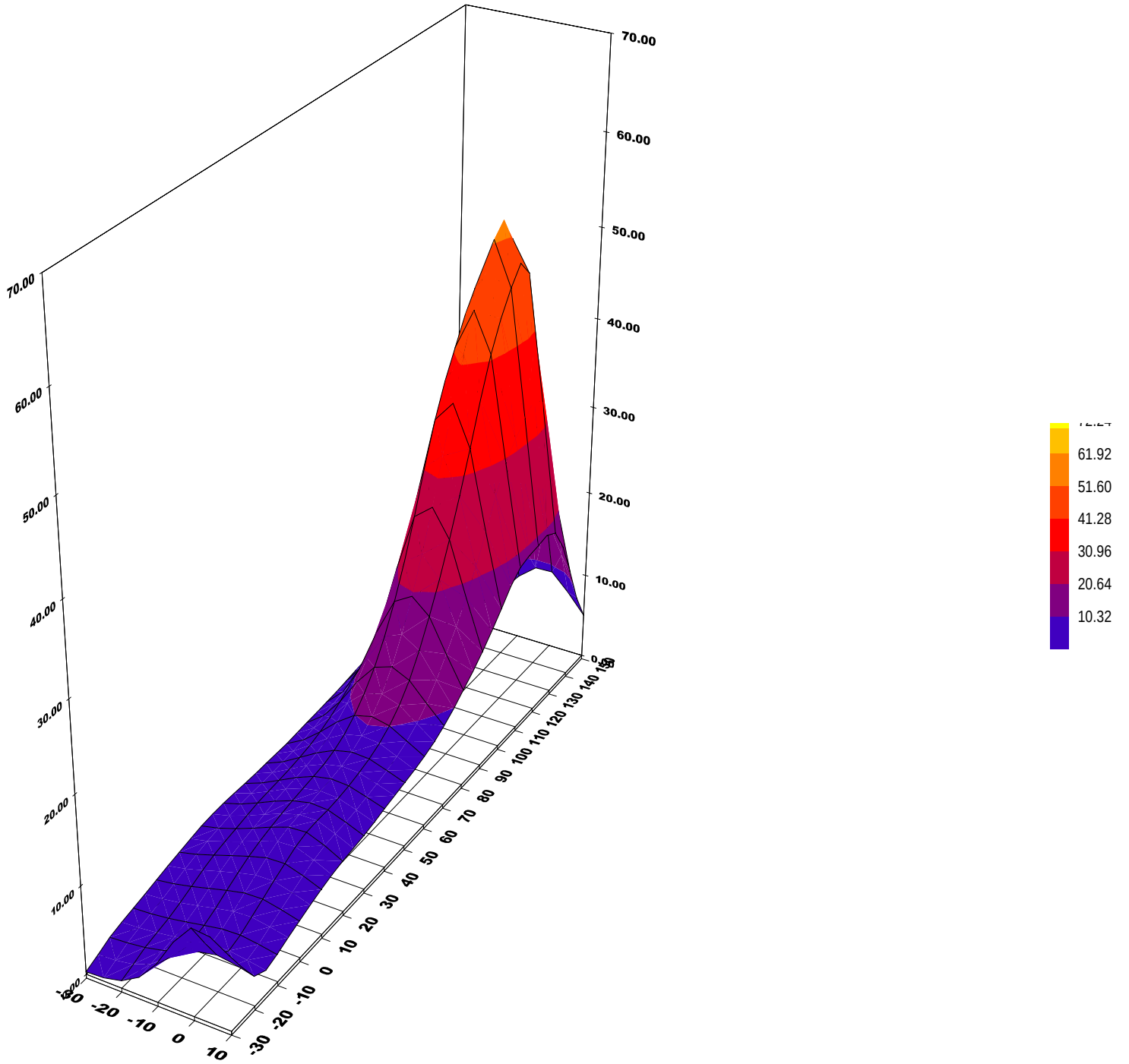
Location of Maximum Field :

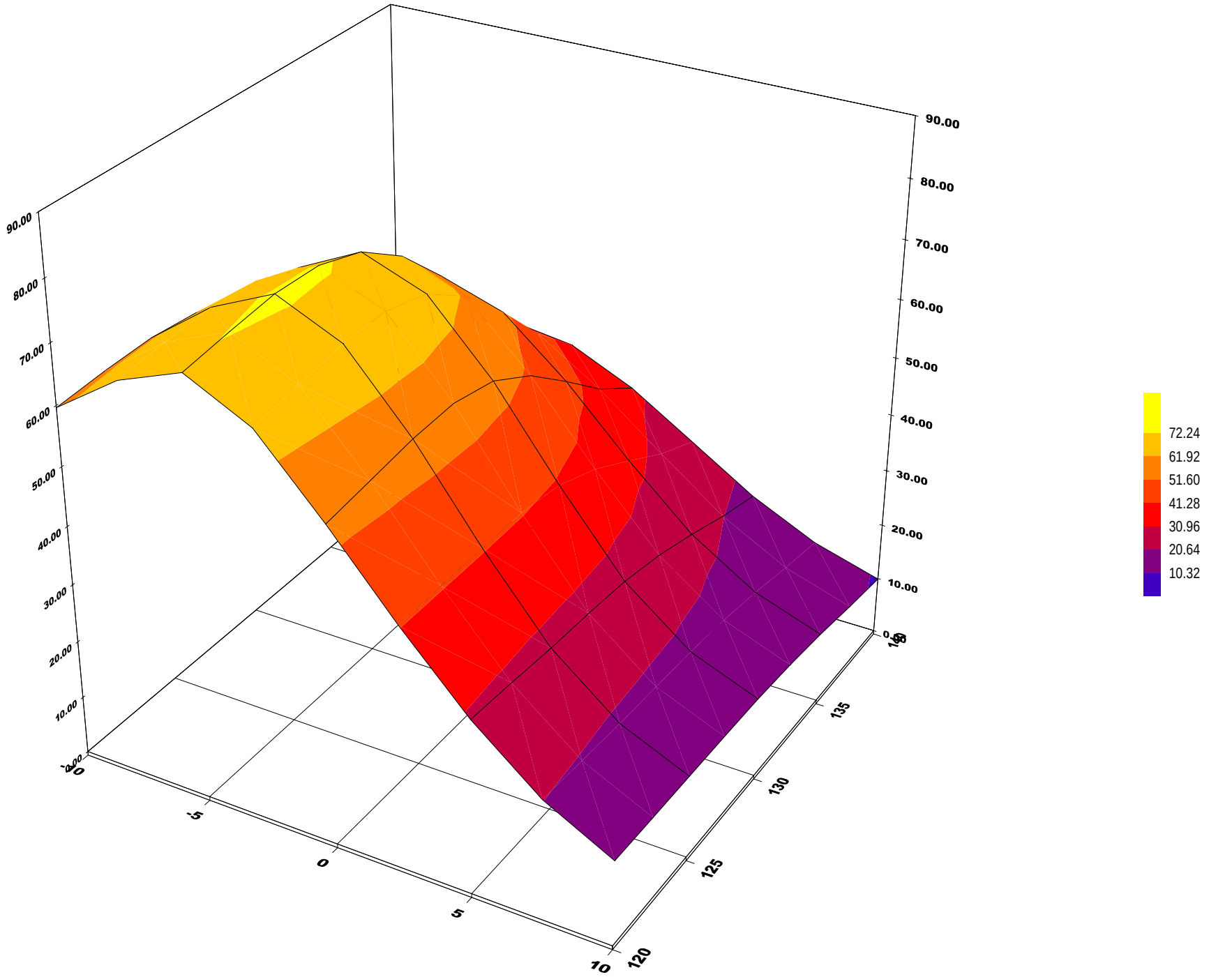
X = -5 Y = 125

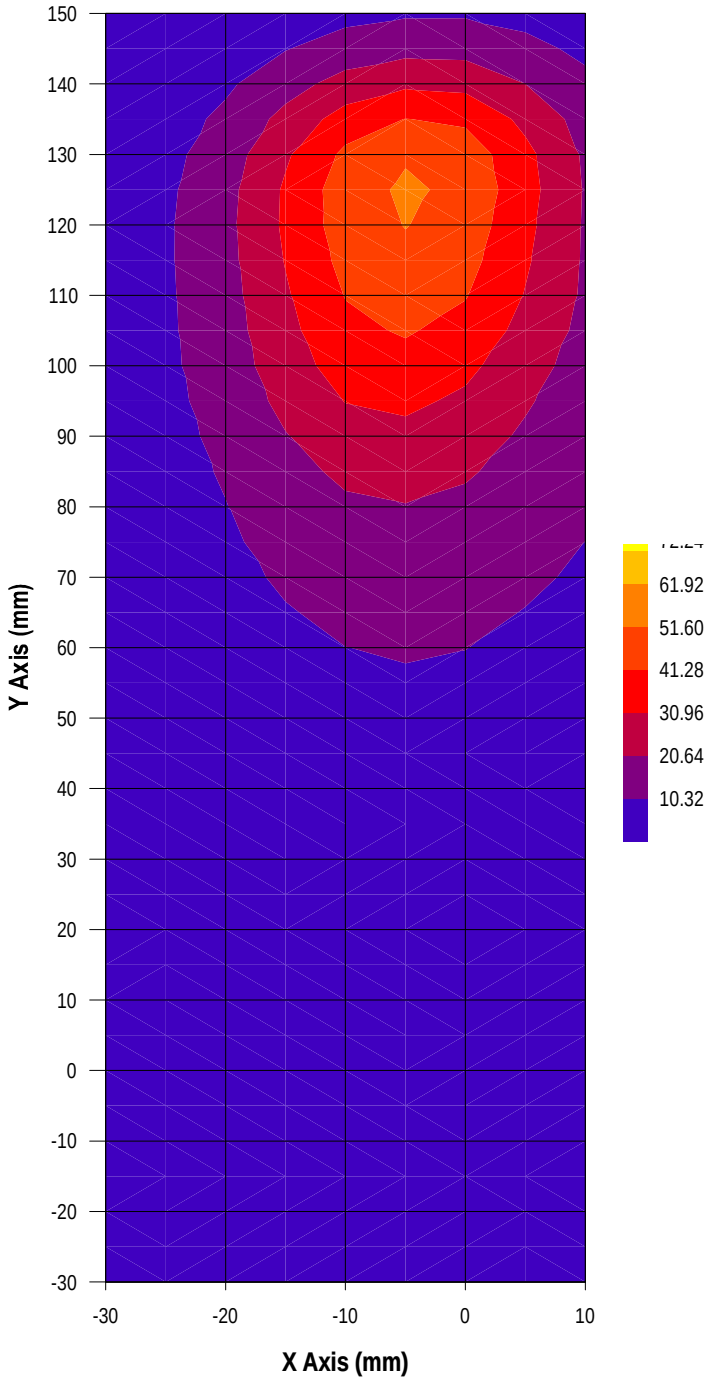
Measured Values (mV) :

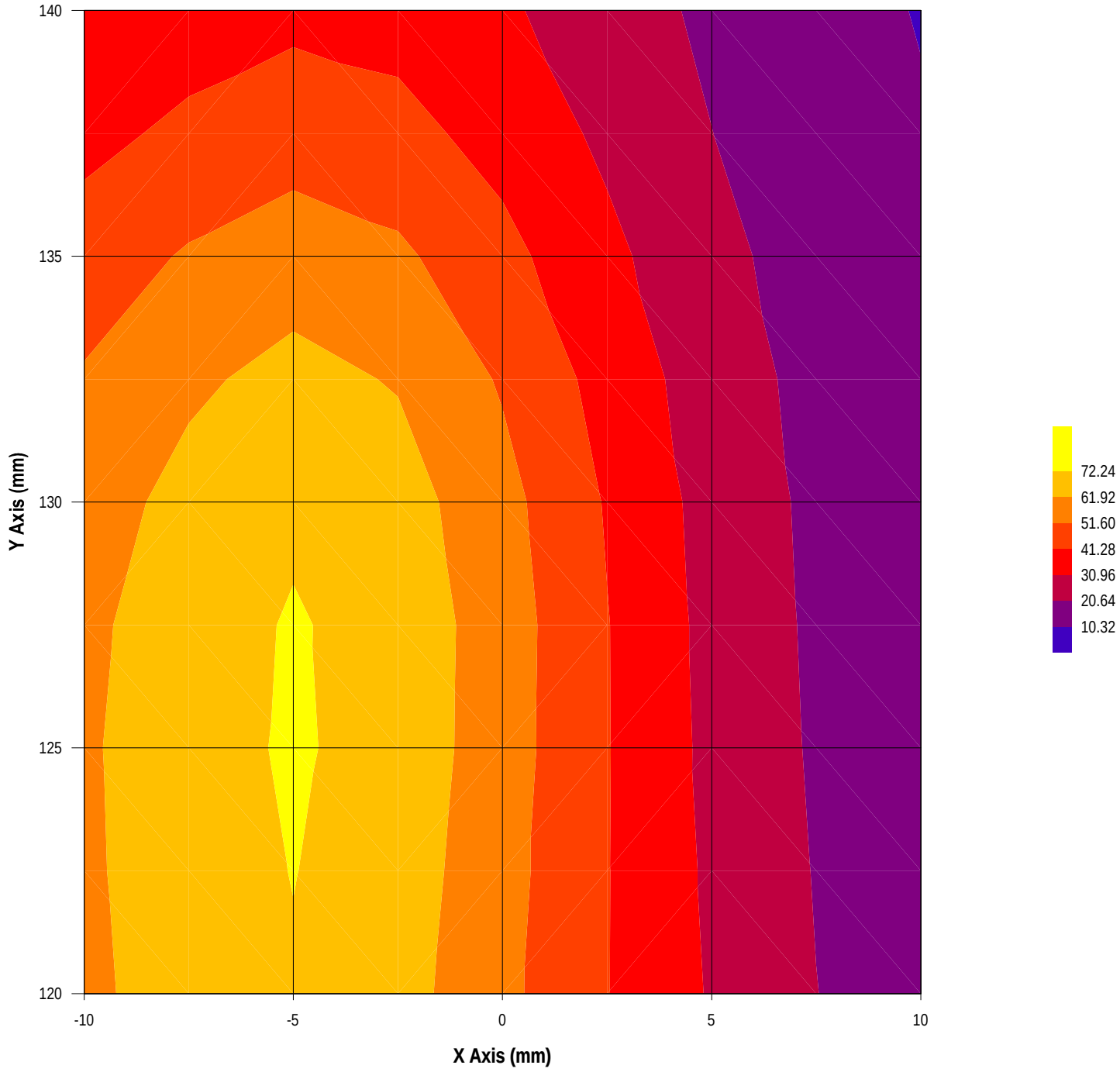
82.897	56.777	34.018	25.736	20.350	16.400
13.539	11.345	9.619	8.188	7.041	

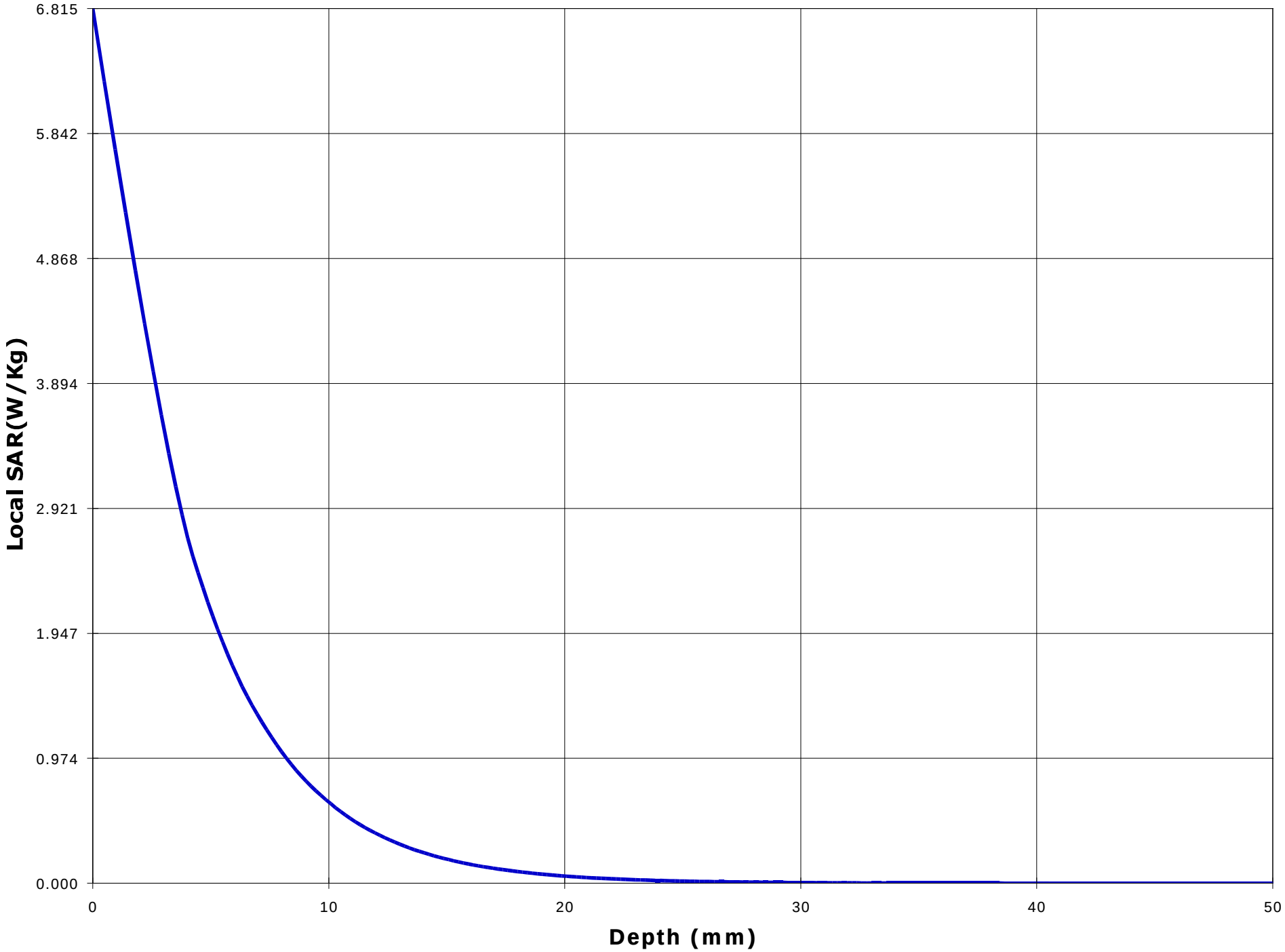
Peak Voltage (mV) : 135.151 **1 Cm Voltage (mV)** : 11.953 **SAR (W/Kg)** : 2.711

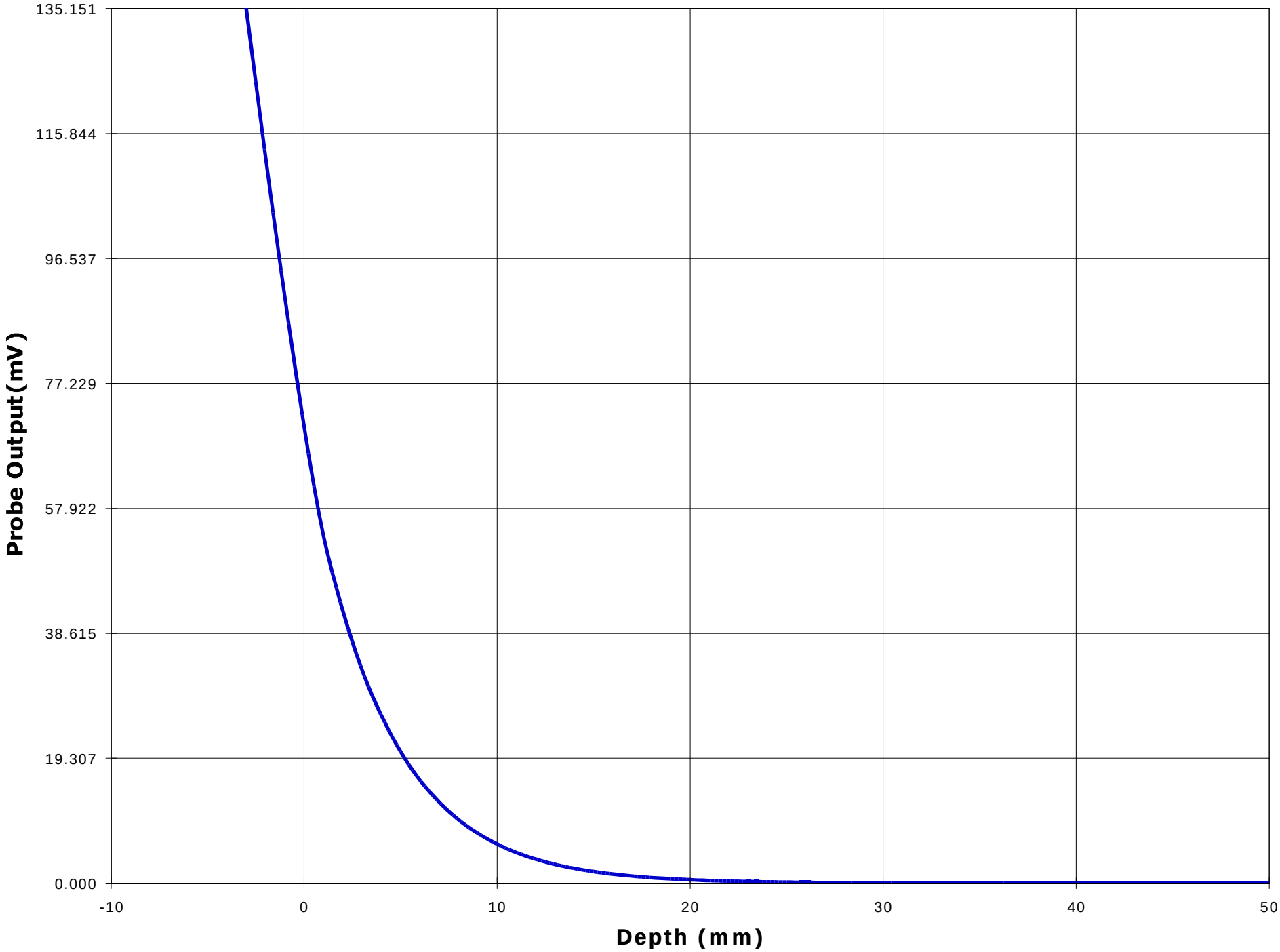

70.00
60.00
50.00
40.00
30.00
20.00
10.00
-30 -20 -10 0 10
-30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
61.92
51.60
41.28
30.96
20.64
10.32


90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-5
0
5
10
120
125
130
135
72.24
61.92
51.60
41.28
30.96
20.64
10.32


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
61.92
51.60
41.28
30.96
20.64
10.32


140
135
130
125
120
Y Axis (mm)
-10
-5
0
5
10
X Axis (mm)
72.24
61.92
51.60
41.28
30.96
20.64
10.32


6.815
5.842
4.868
3.894
2.921
1.947
0.974
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


135.151
115.844
96.537
77.229
57.922
38.615
19.307
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/17/00
Time : 12:07:49 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 173.95 W
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.91
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.024

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

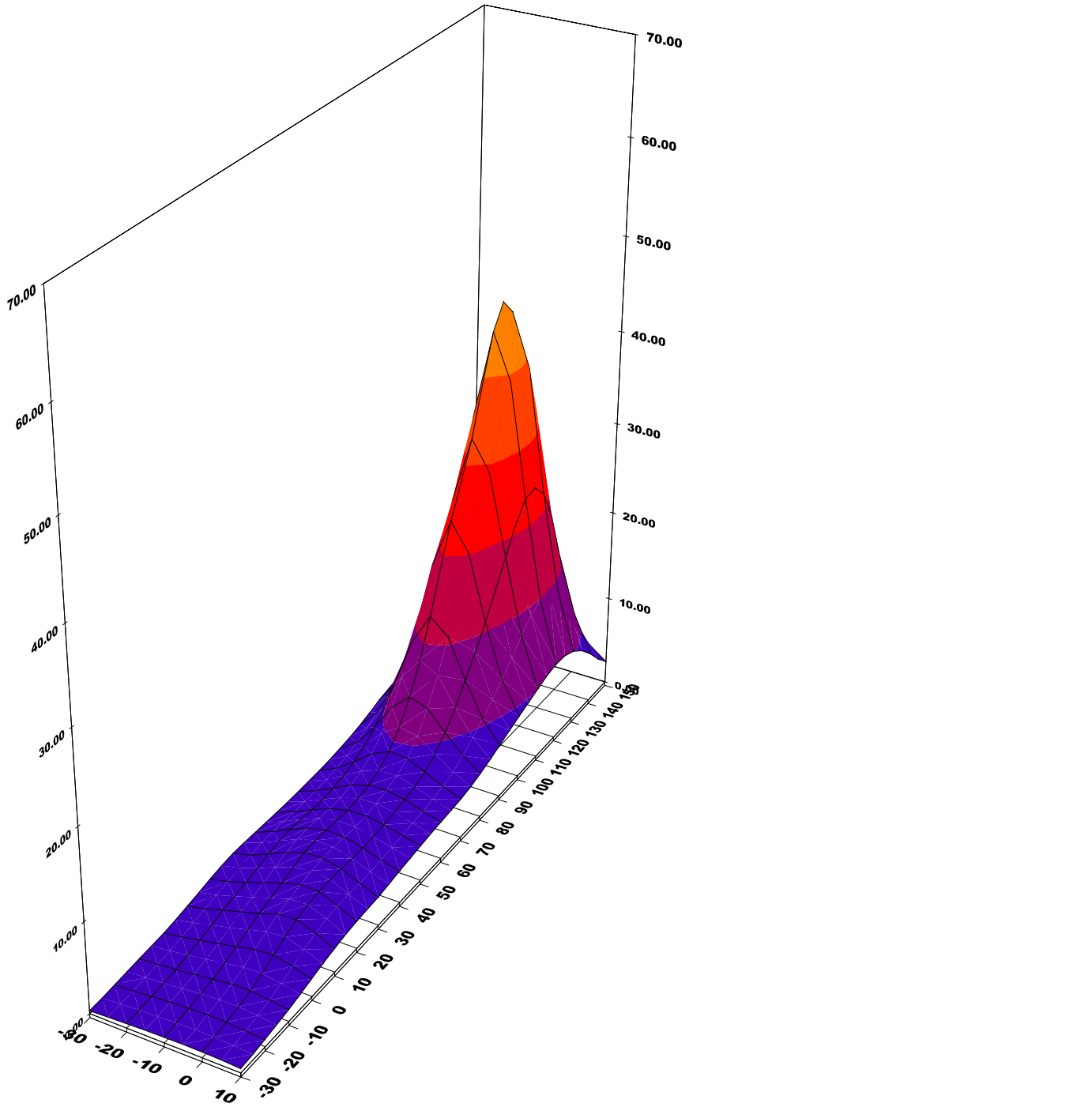
Location of Maximum Field :

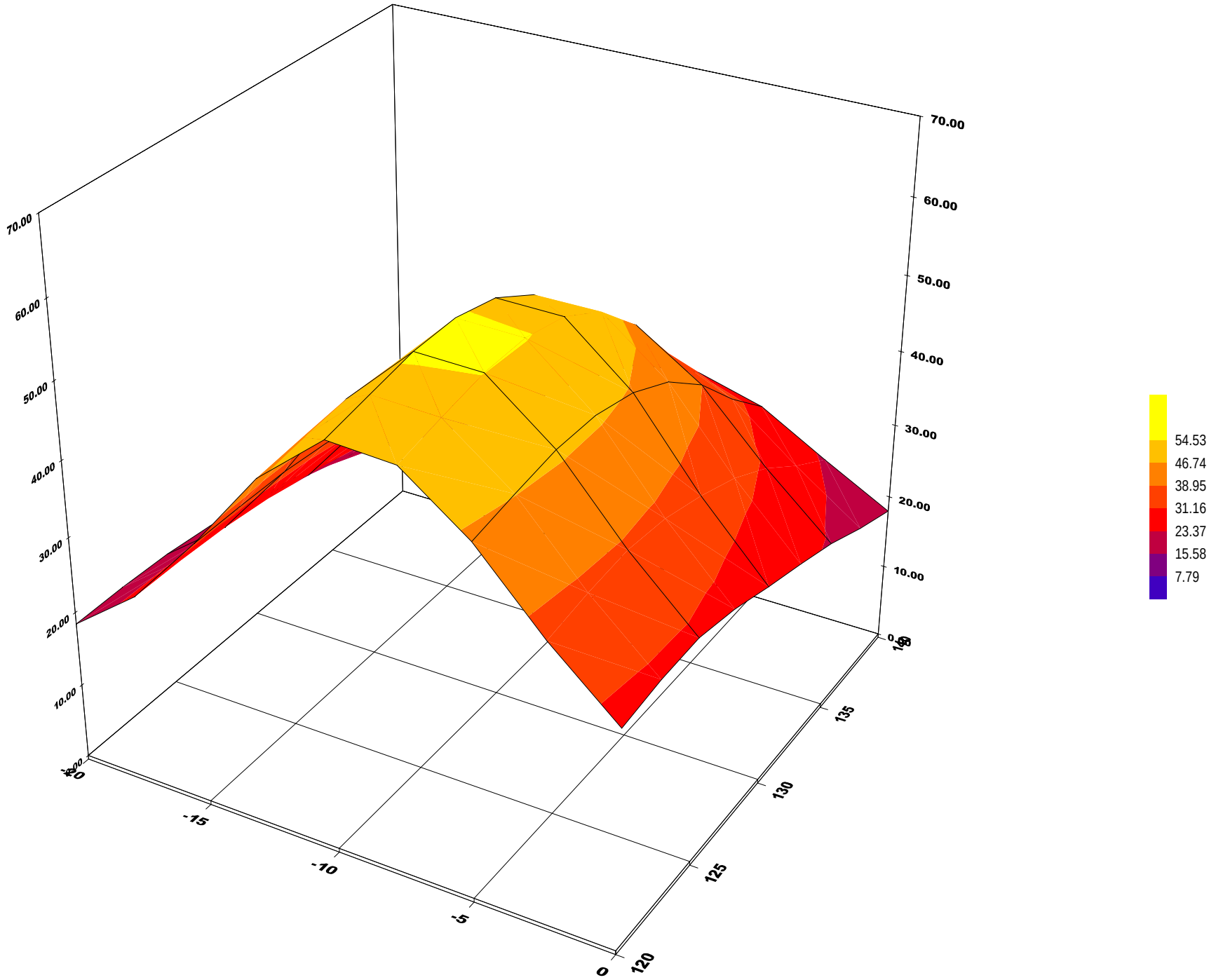
X = -10 Y = 125

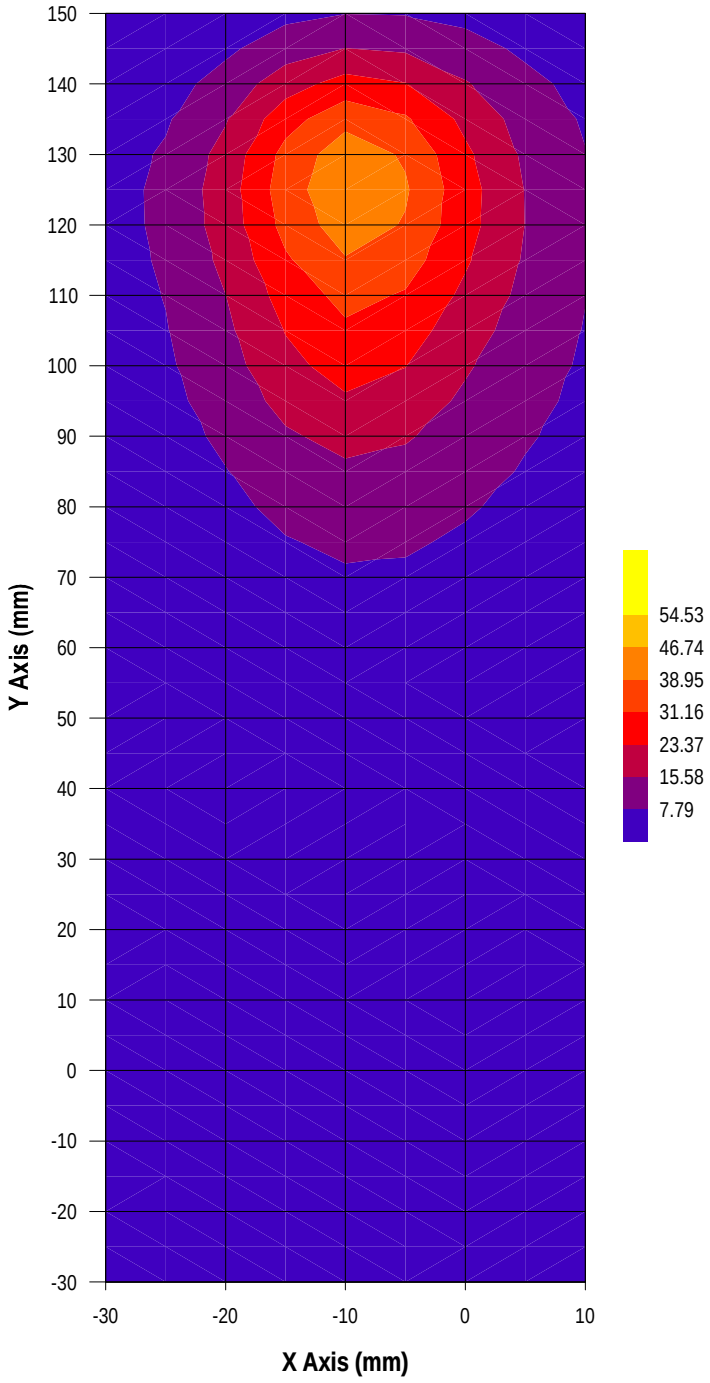
Measured Values (mV) :

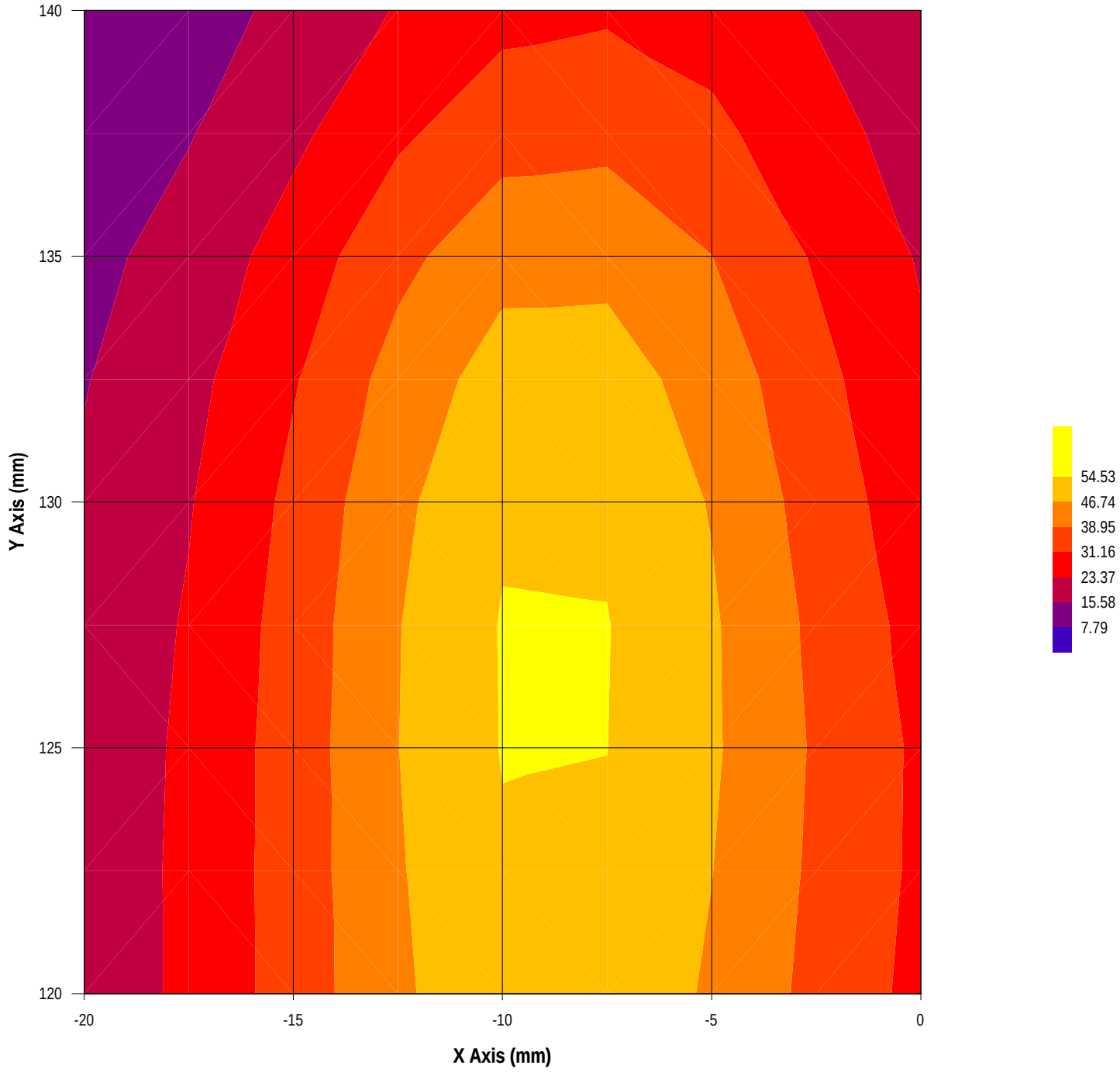
62.394	39.800	25.437	18.445	14.333	11.621
9.635	7.937	6.565	5.507	4.726	

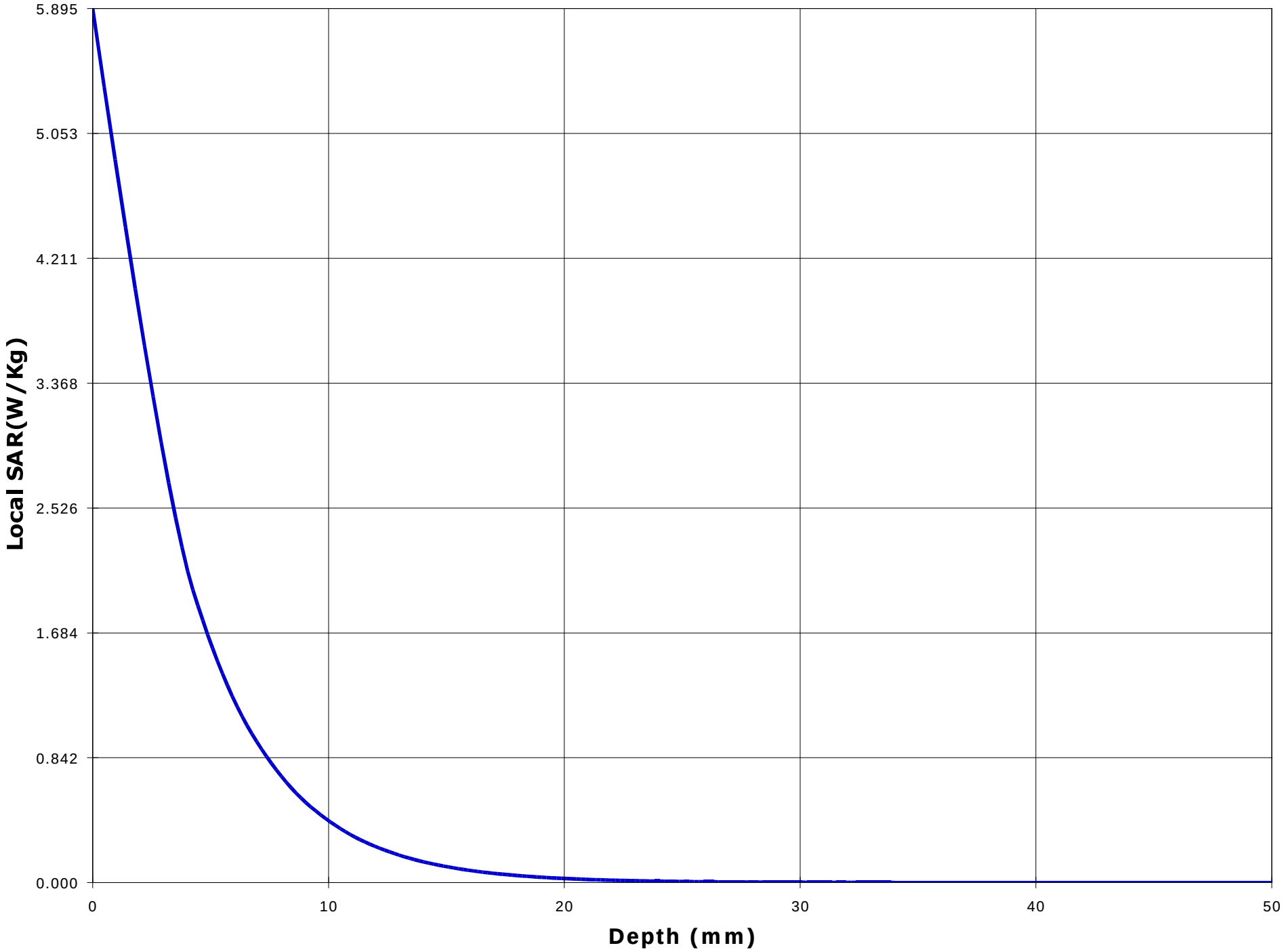
Peak Voltage (mV) : 116.900 **1 Cm Voltage (mV)** : 7.814 **SAR (W/Kg)** : 2.012

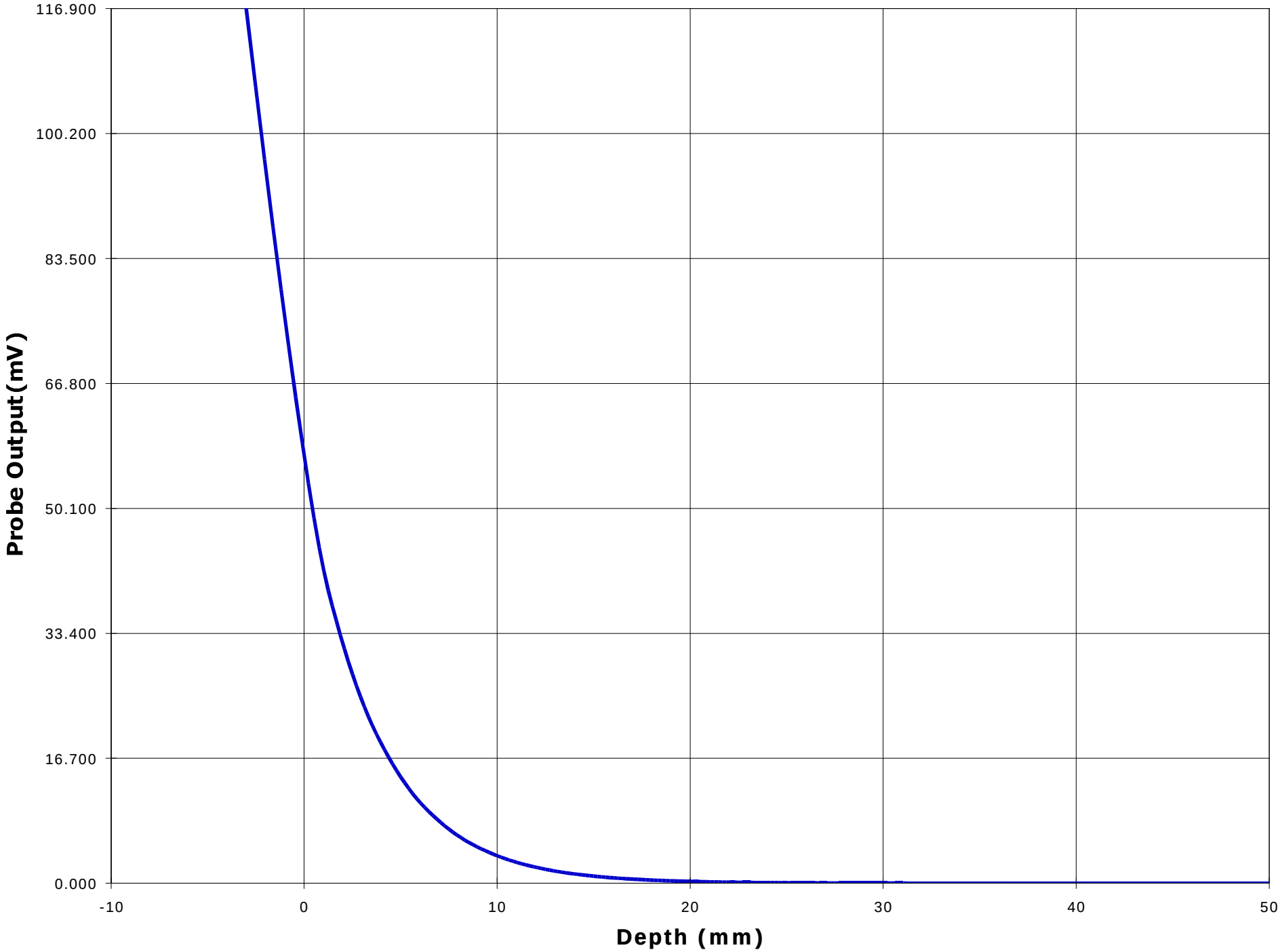

70.00
60.00
50.00
40.00
30.00
20.00
10.00
-30 -20 -10 0 10
-30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
70.00
60.00
50.00
40.00
30.00
20.00
10.00
54.53
46.74
38.95
31.16
23.37
15.58
7.79


70.00
60.00
50.00
40.00
30.00
20.00
10.00
0
-15
-10
-5
120
125
130
135
54.53
46.74
38.95
31.16
23.37
15.58
7.79


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
54.53
46.74
38.95
31.16
23.37
15.58
7.79


140
135
130
125
120
Y Axis (mm)
-20
-15
-10
-5
0
X Axis (mm)
54.53
46.74
38.95
31.16
23.37
15.58
7.79


5.895
5.053
4.211
3.368
2.526
1.684
0.842
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


116.900
100.200
83.500
66.800
50.100
33.400
16.700
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/17/00
Time : 12:28:48 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 136.05 N
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.90
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.014

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

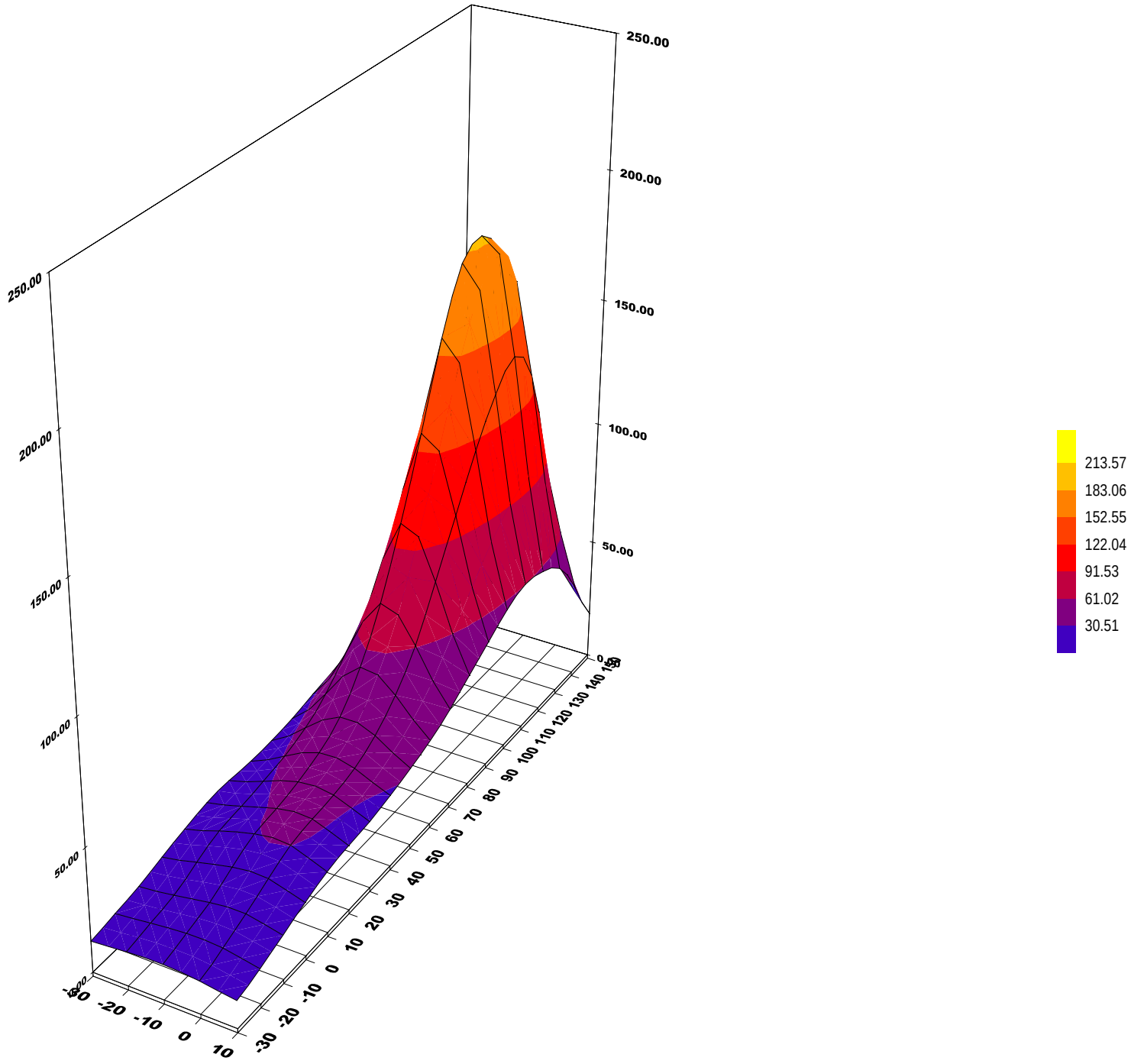
Location of Maximum Field :

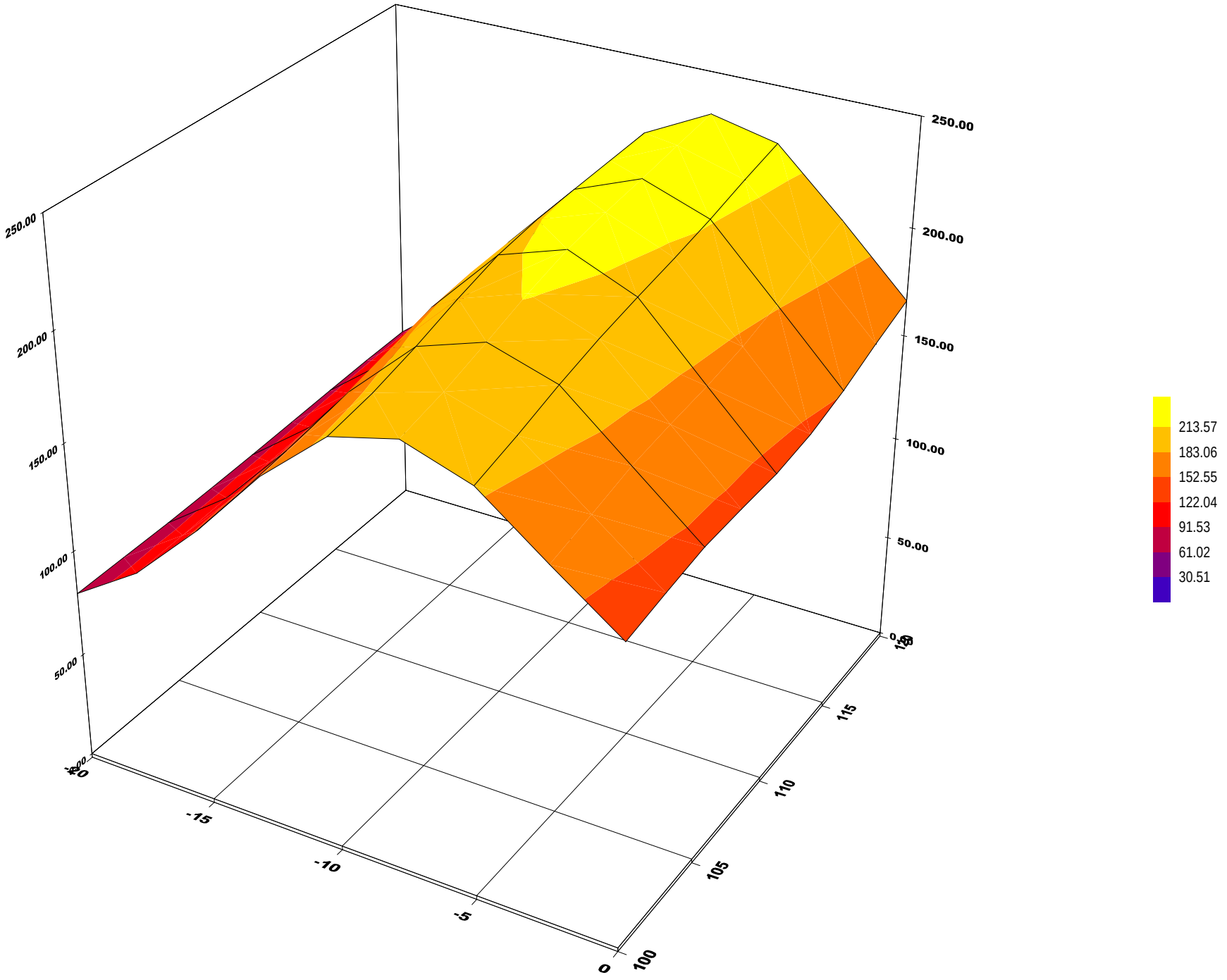
X = -5 Y = 120

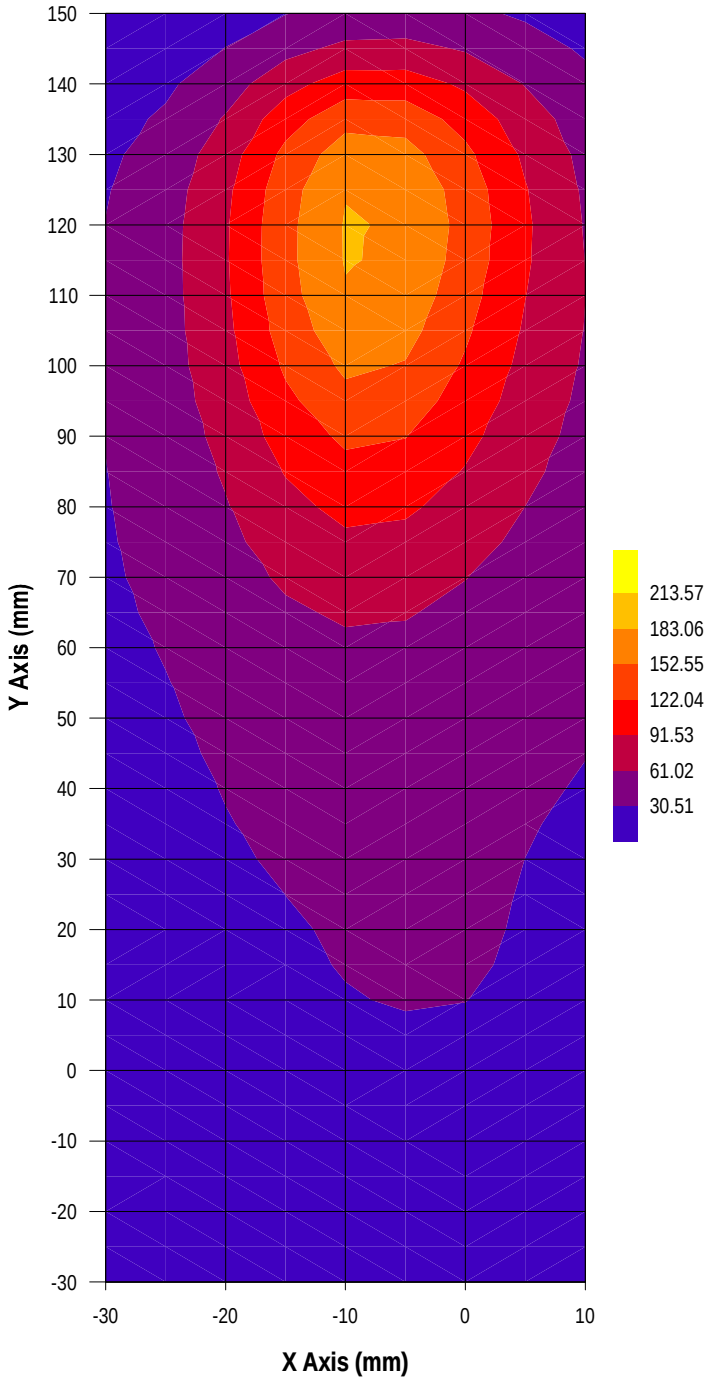
Measured Values (mV) :

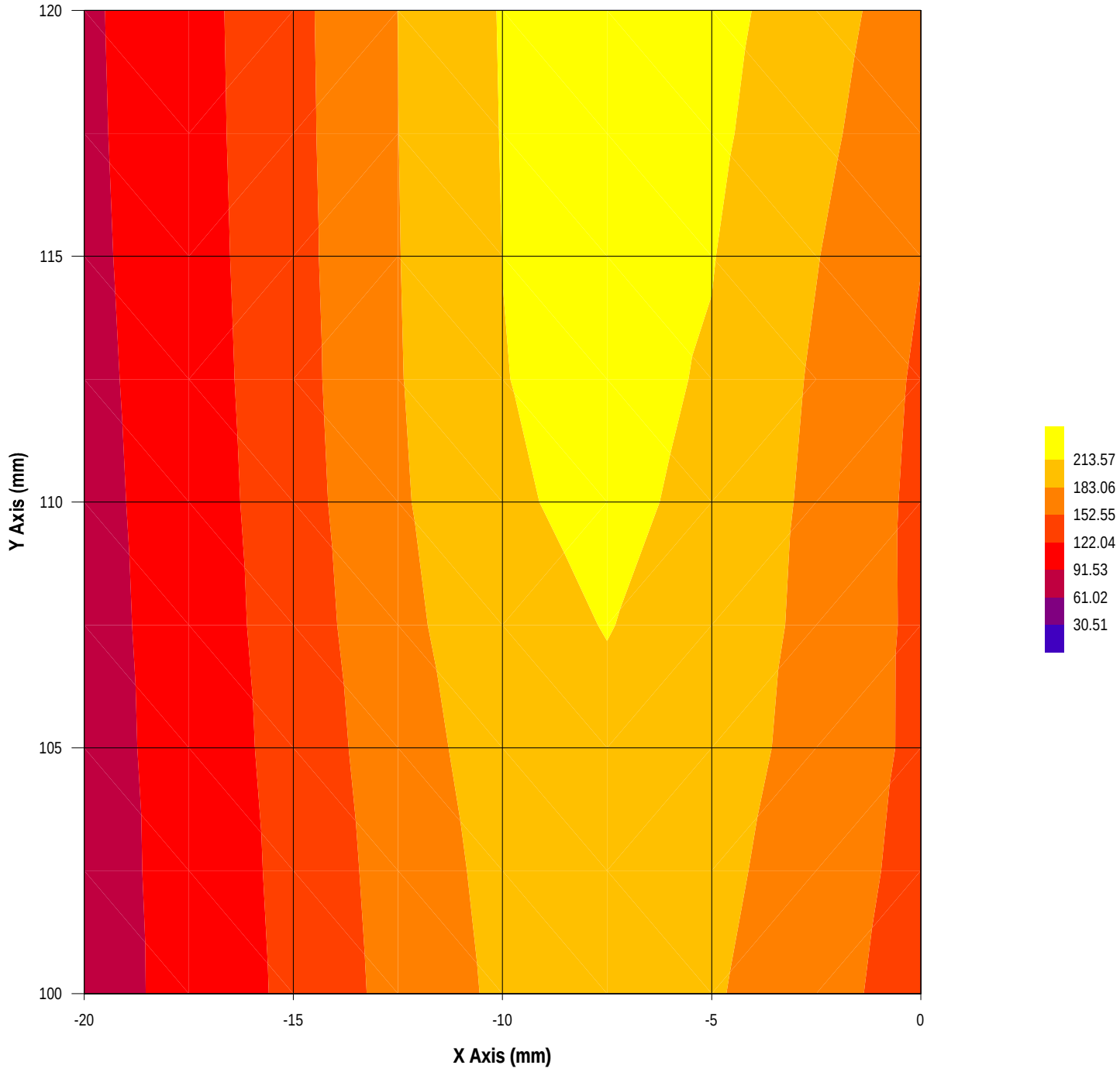
244.236	170.951	117.732	91.492	75.553	64.160
54.918	47.897	41.426	36.503	32.232	

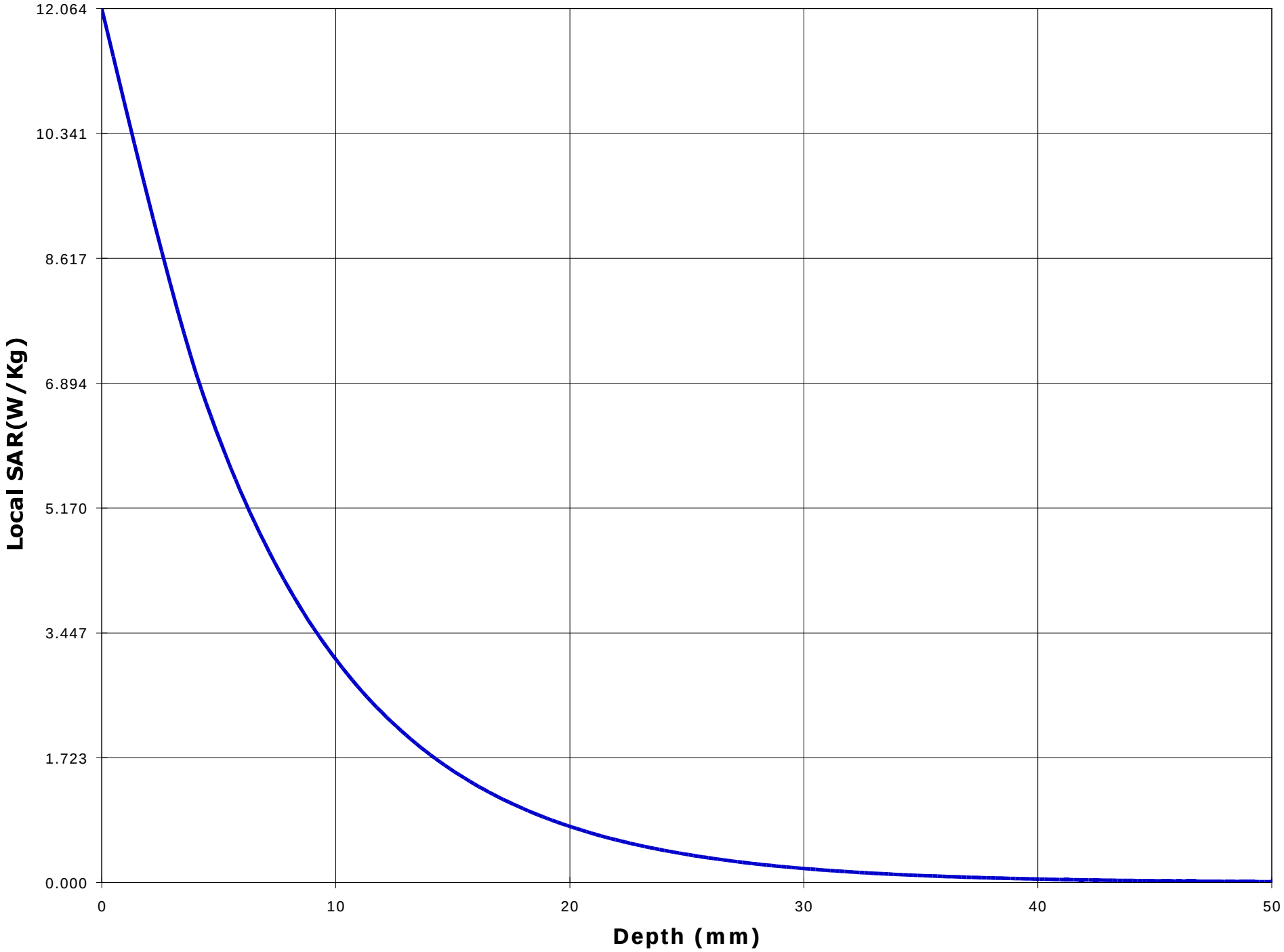
Peak Voltage (mV) : 239.242 **1 Cm Voltage (mV)** : 60.204 **SAR (W/Kg)** : 8.572

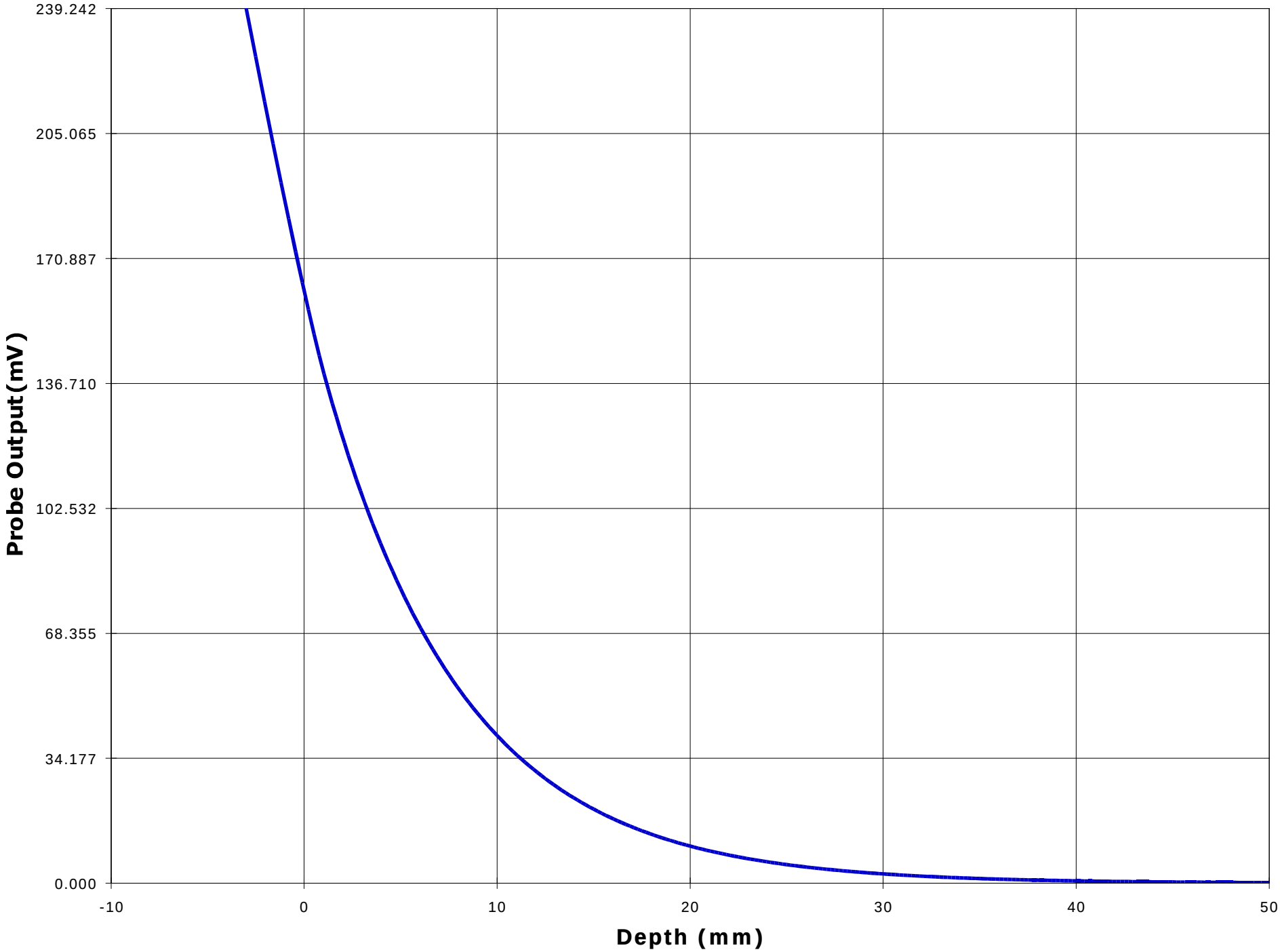

250.00
200.00
150.00
100.00
50.00
213.57
183.06
152.55
122.04
91.53
61.02
30.51


250.00
200.00
150.00
100.00
50.00
-20
-15
-10
-5
0
100
105
110
115
213.57
183.06
152.55
122.04
91.53
61.02
30.51


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
213.57
183.06
152.55
122.04
91.53
61.02
30.51


120
115
110
105
100
Y Axis (mm)
-20
-15
-10
-5
0
X Axis (mm)
213.57
183.06
152.55
122.04
91.53
61.02
30.51


12.064
10.341
8.617
6.894
5.170
3.447
1.723
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


239.242
205.065
170.887
136.710
102.532
68.355
34.177
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/17/00
Time : 12:43:57 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 155.05 N
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.75
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 4.861

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

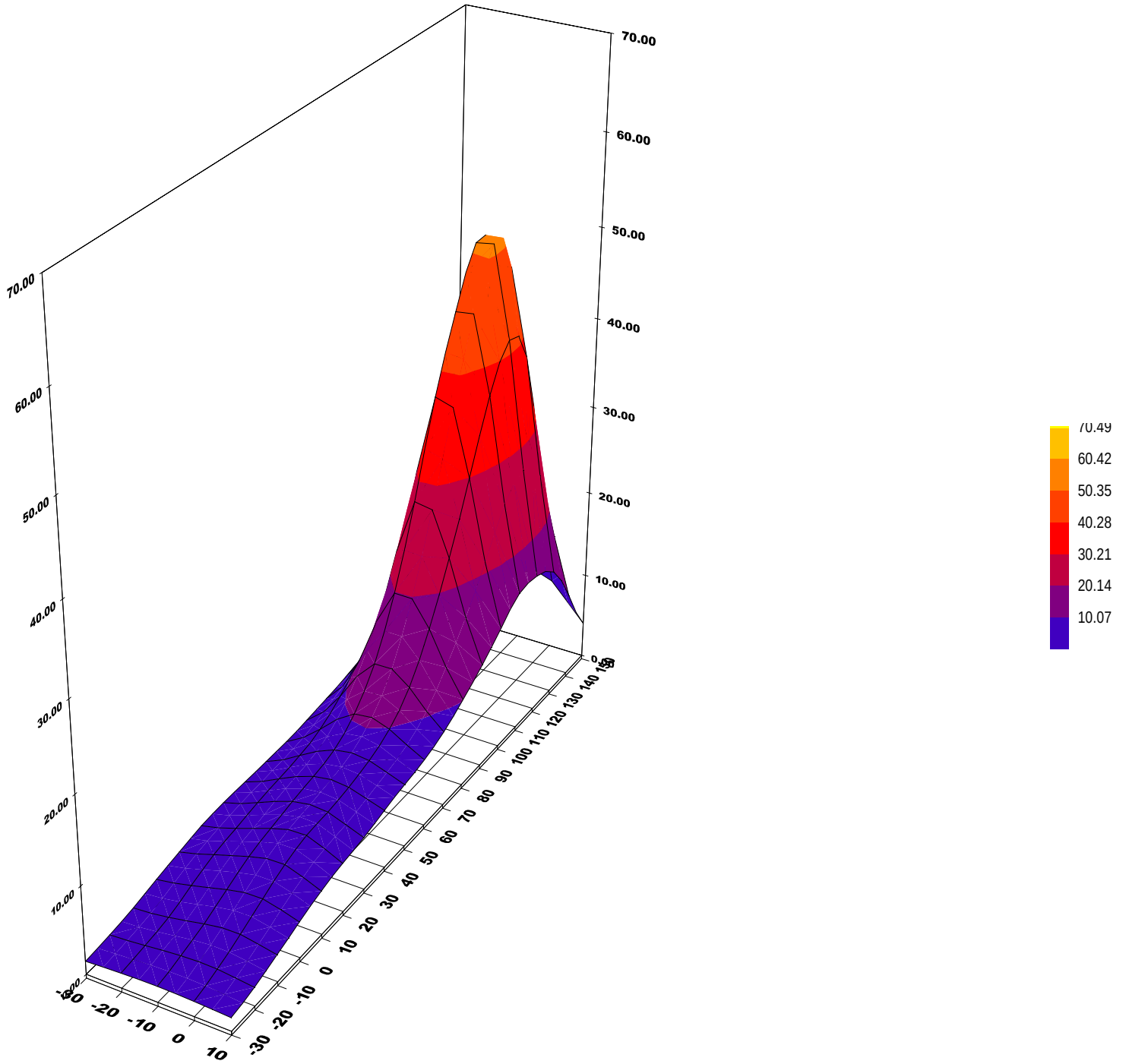
Location of Maximum Field :

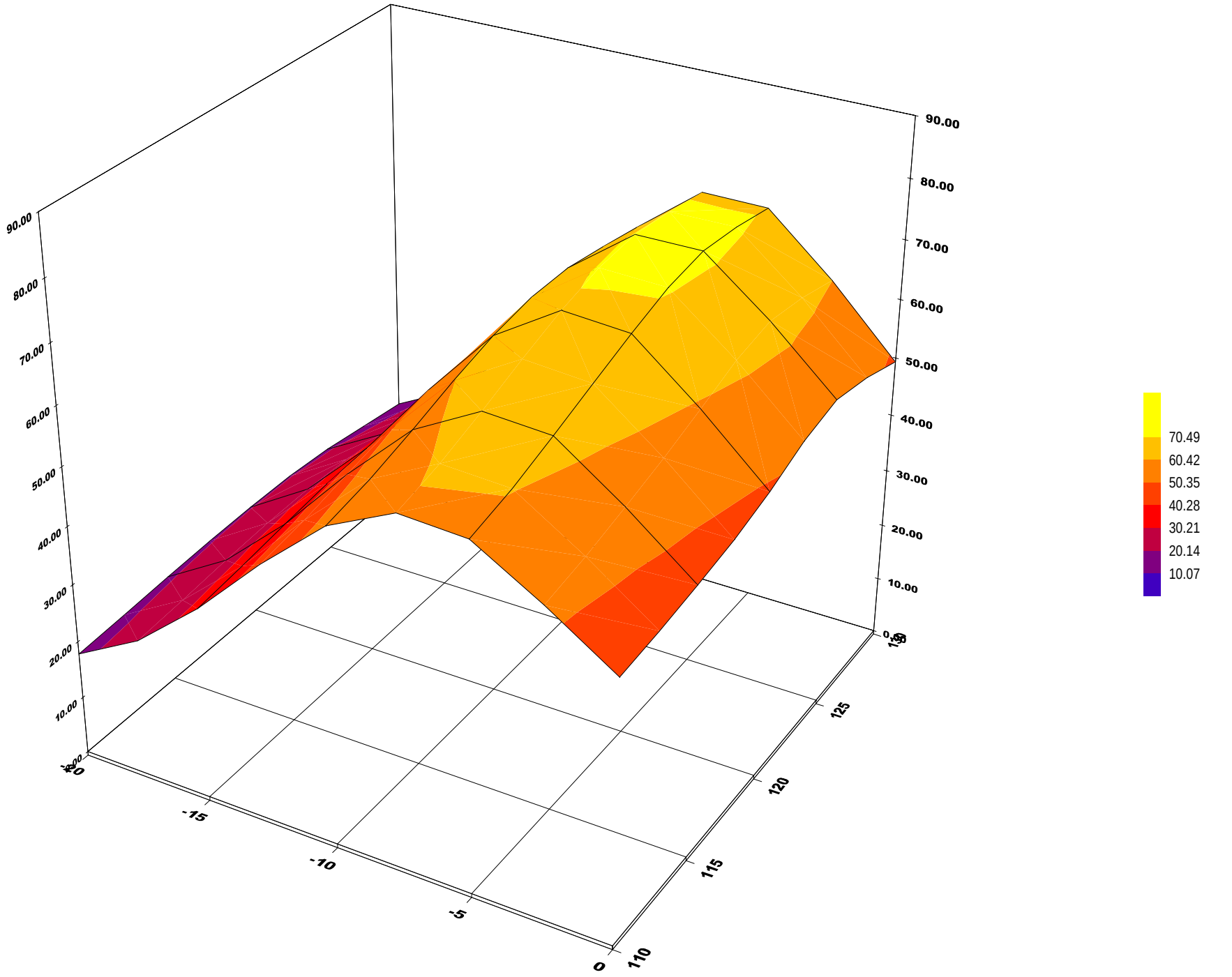
X = -5 Y = 125

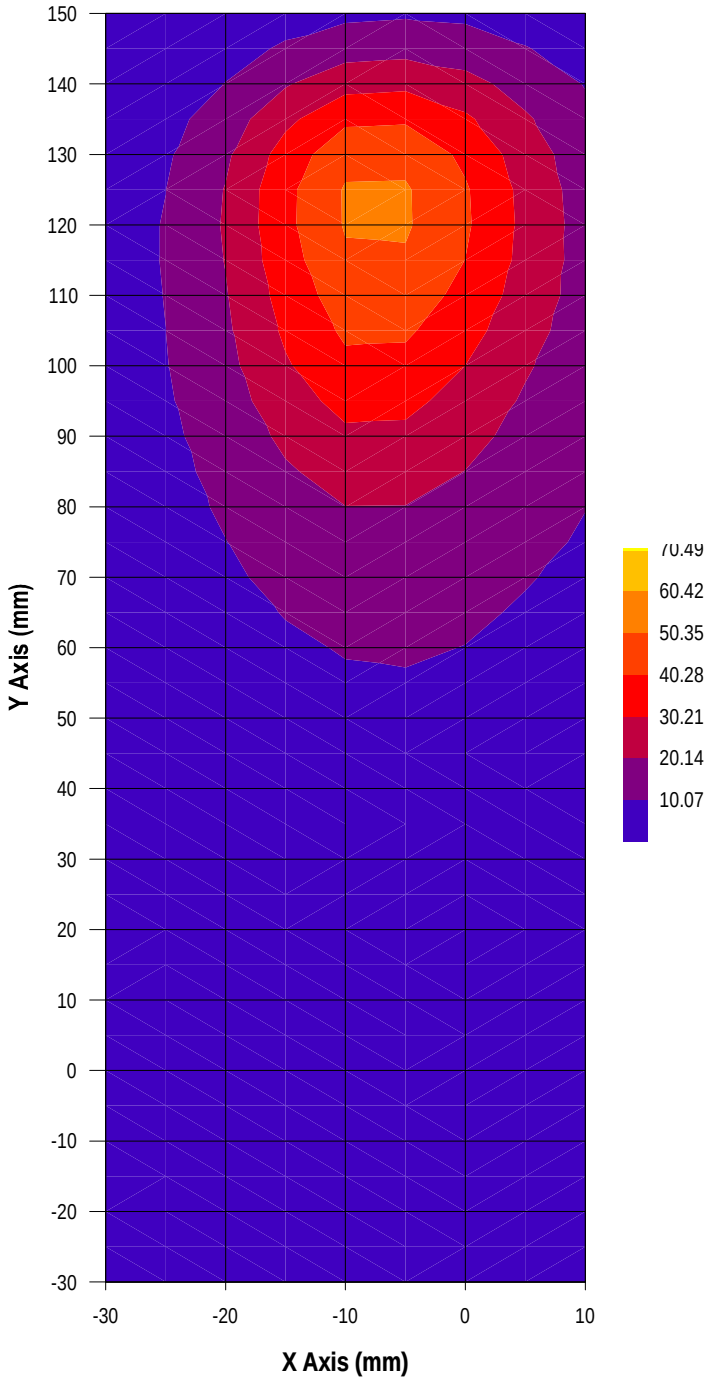
Measured Values (mV) :

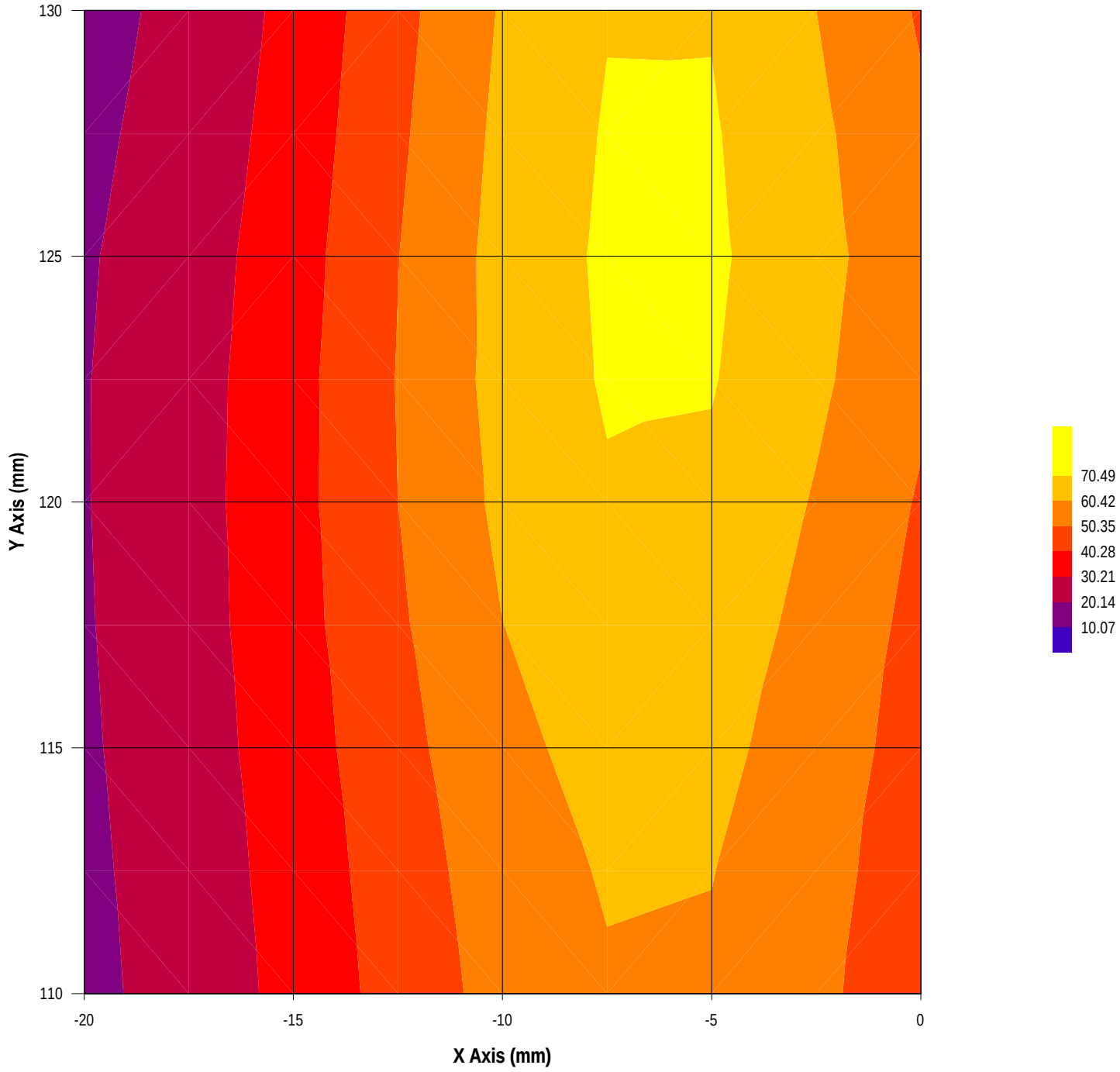
80.787	51.845	33.894	25.009	19.717	15.919
13.177	11.237	9.410	8.050	6.824	

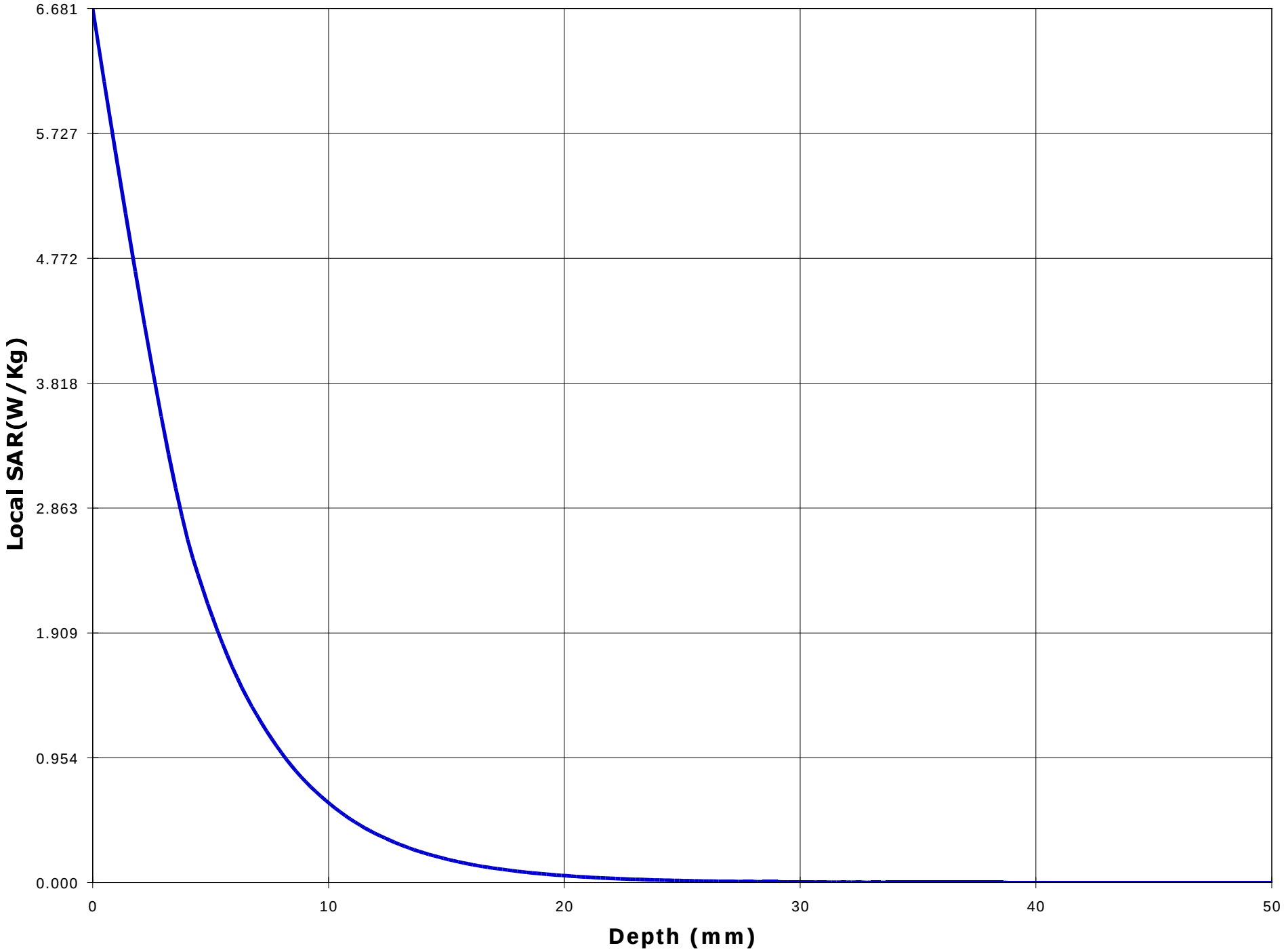
Peak Voltage (mV) : 132.490 **1 Cm Voltage (mV)** : 11.543 **SAR (W/Kg)** : 2.671

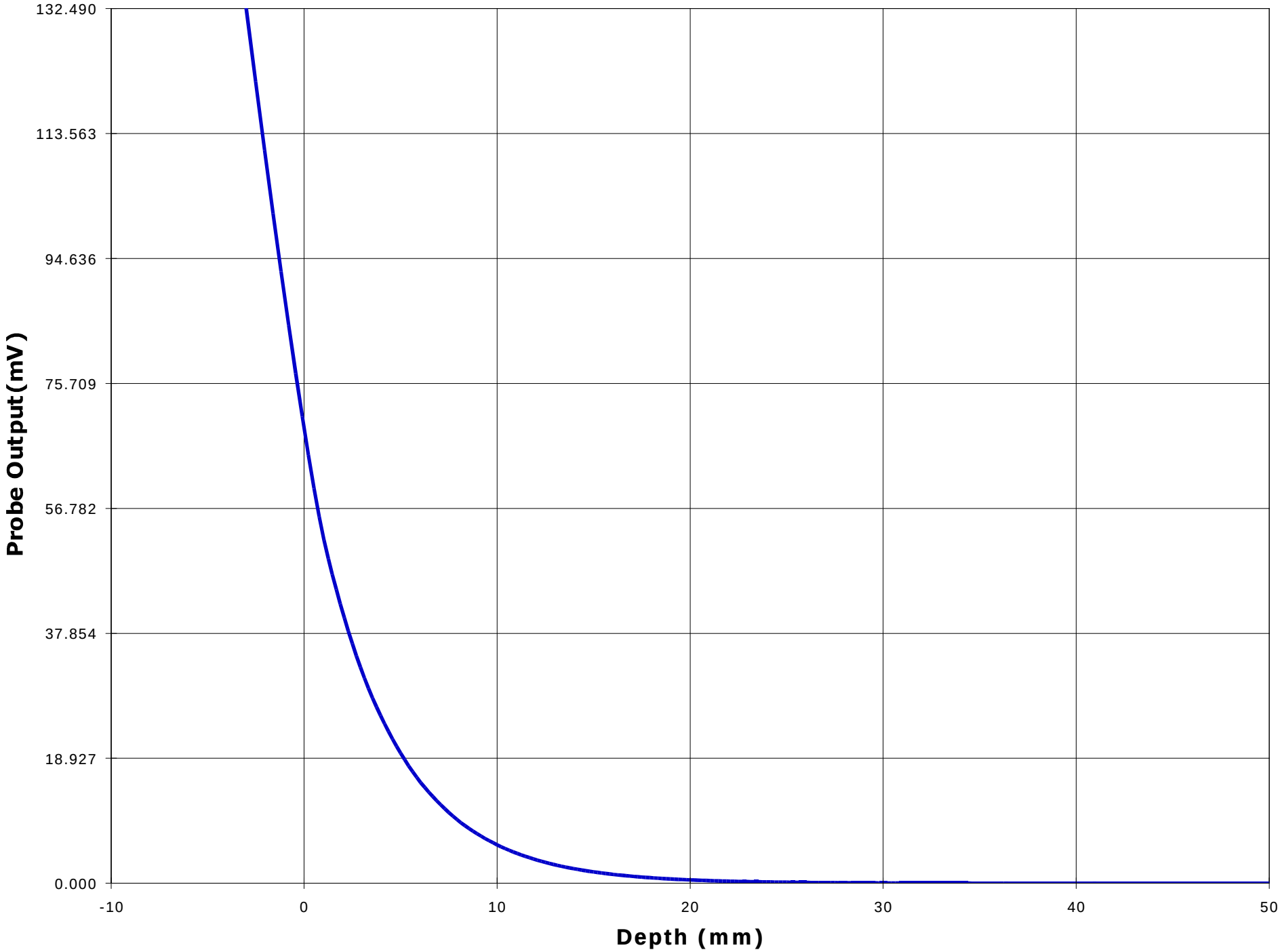

70.00
60.00
50.00
40.00
30.00
20.00
10.00
-30 -20 -10 0 10
-30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
70.49
60.42
50.35
40.28
30.21
20.14
10.07


90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0
-15
-10
-5
0
110
115
120
125
70.49
60.42
50.35
40.28
30.21
20.14
10.07


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
70.49
60.42
50.35
40.28
30.21
20.14
10.07


130
125
120
115
110
Y Axis (mm)
-20
-15
-10
-5
0
X Axis (mm)
70.49
60.42
50.35
40.28
30.21
20.14
10.07


6.681
5.727
4.772
3.818
2.863
1.909
0.954
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


132.490
113.563
94.636
75.709
56.782
37.854
18.927
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/17/00
Time : 12:59:08 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 173.95 N
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Waist	**Dielectric Constant**	: 63.0
Simulated Tissue	: Muscle	**Conductivity**	: 0.78

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.89
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.545	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.004

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

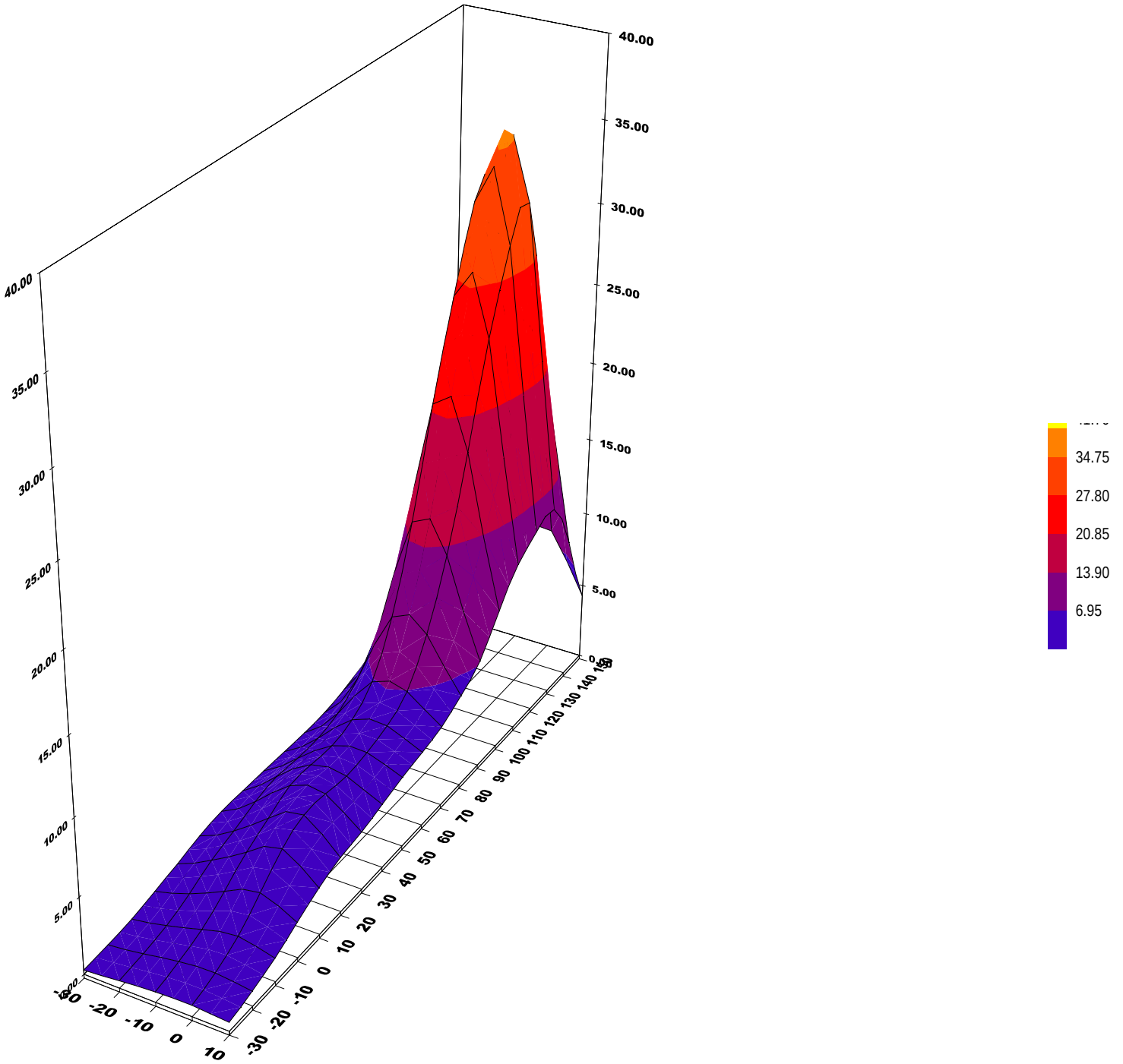
Location of Maximum Field :

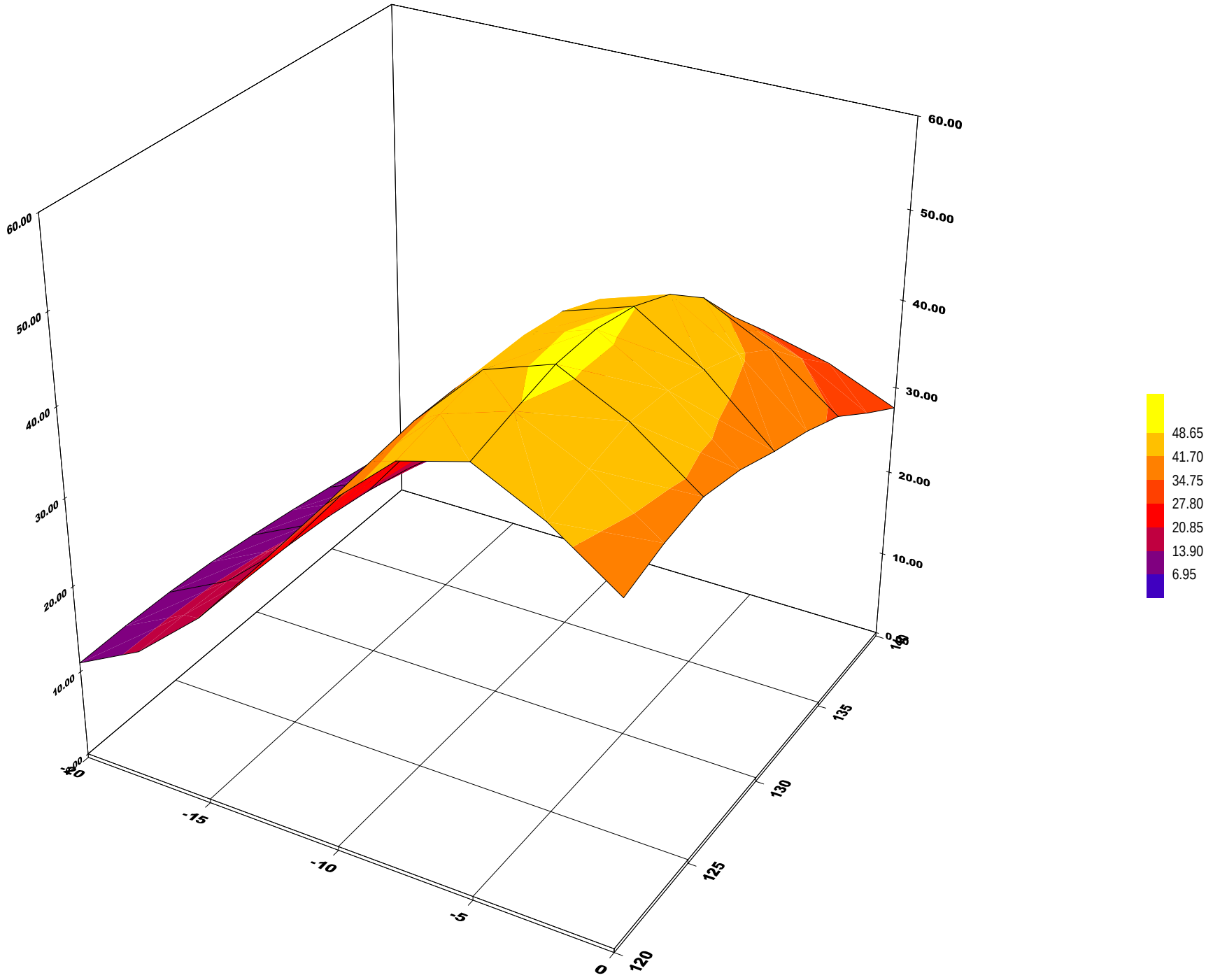
X = -5 Y = 130

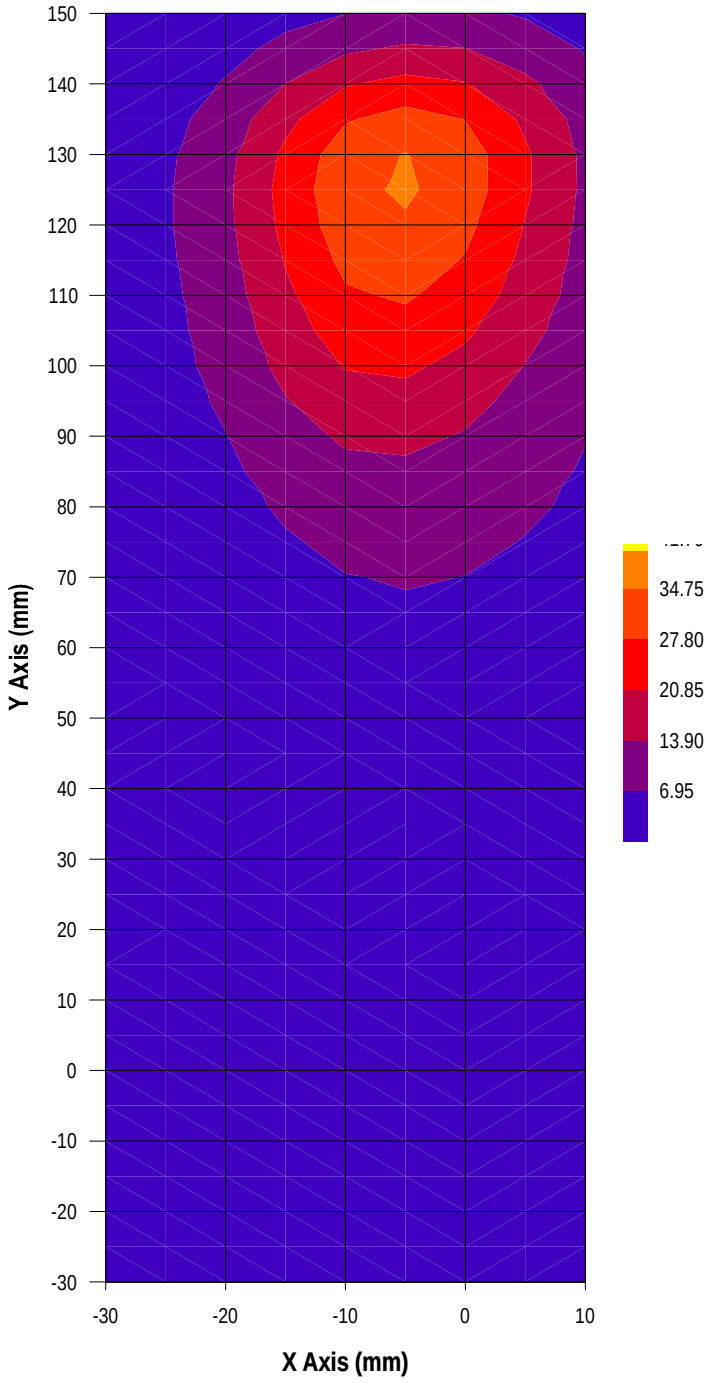
Measured Values (mV) :

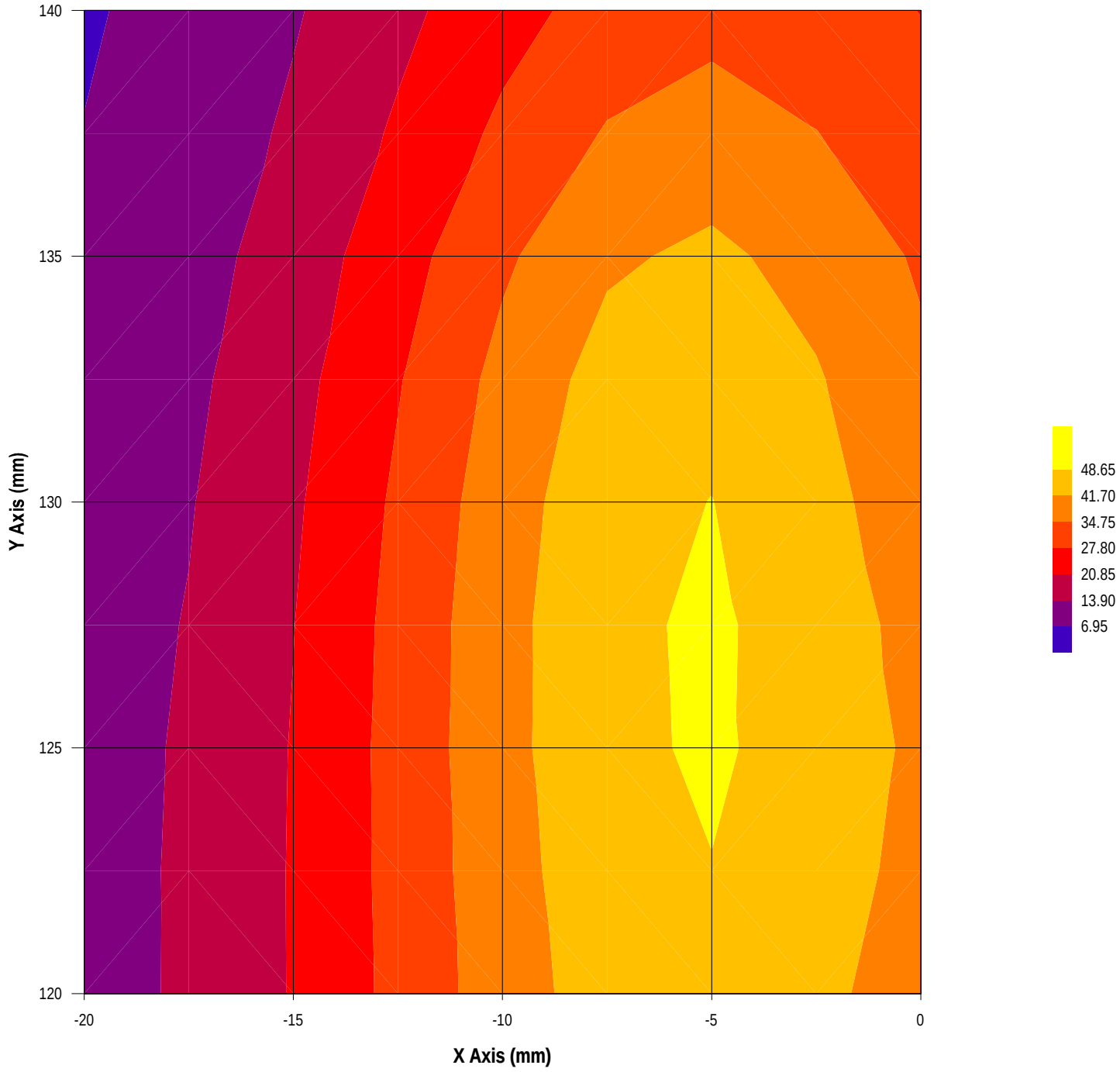
54.997	36.962	23.188	16.493	12.608	10.168
8.317	6.840	5.672	4.784	3.970	

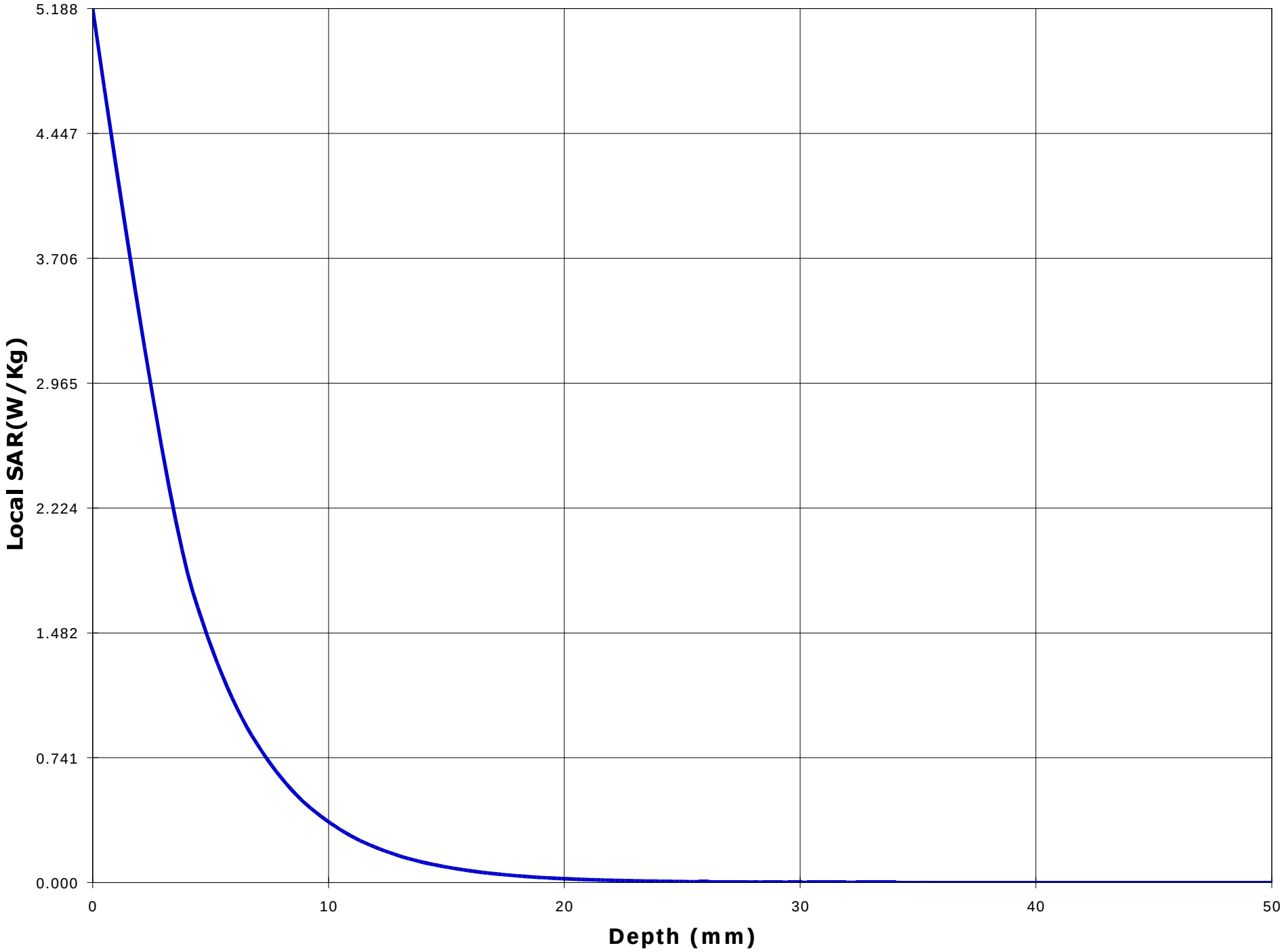
Peak Voltage (mV) : 102.887 **1 Cm Voltage (mV)** : 6.739 **SAR (W/Kg)** : 1.836

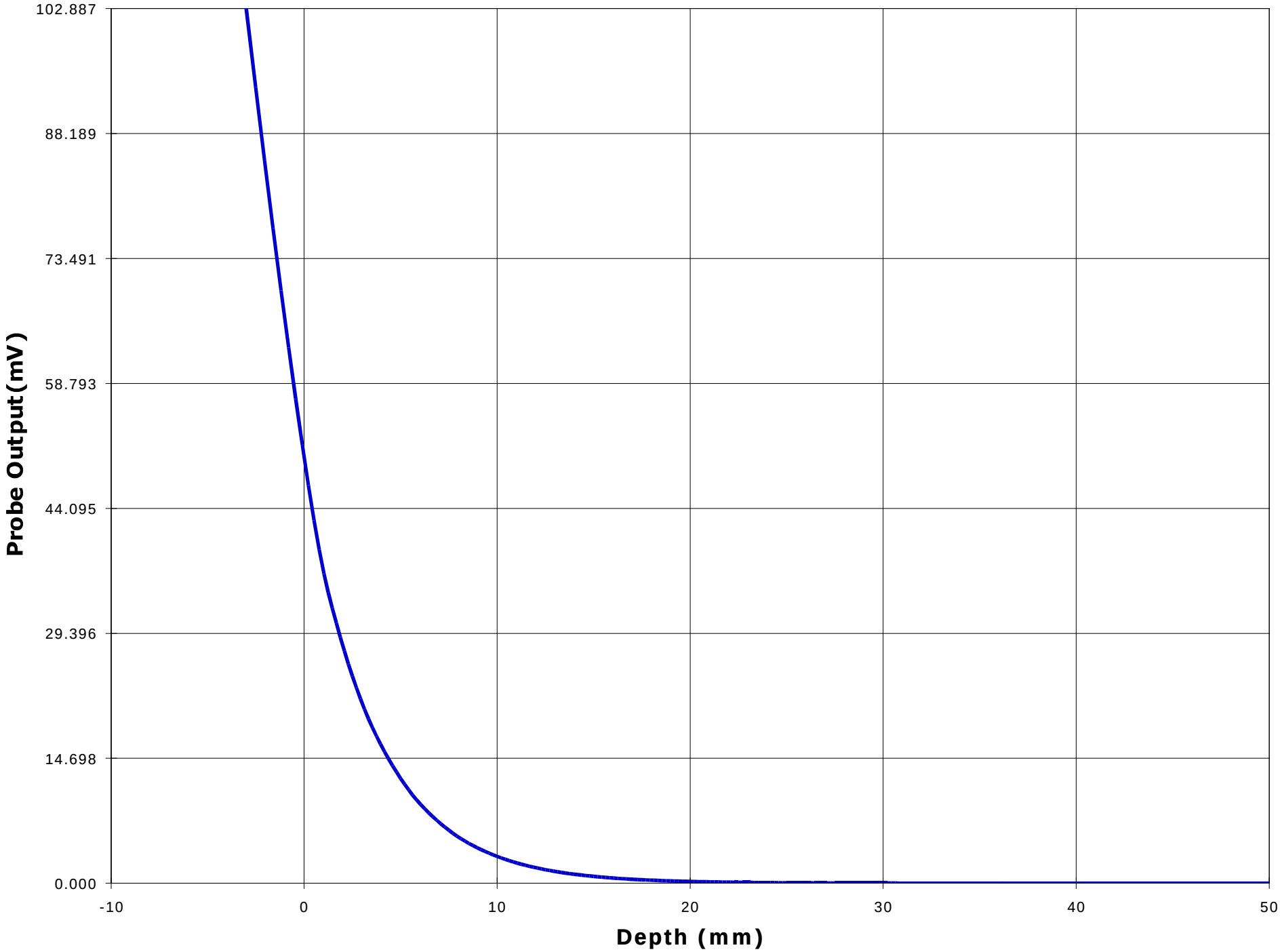

40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
-30 -20 -10 0 10
-30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
34.75
27.80
20.85
13.90
6.95


60.00
50.00
40.00
30.00
20.00
10.00
0
-15
-10
-5
120
125
130
135
48.65
41.70
34.75
27.80
20.85
13.90
6.95


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Y Axis (mm)
-30
-20
-10
0
10
X Axis (mm)
34.75
27.80
20.85
13.90
6.95


140
135
130
125
120
Y Axis (mm)
-20
-15
-10
-5
0
X Axis (mm)
48.65
41.70
34.75
27.80
20.85
13.90
6.95


5.188
4.447
3.706
2.965
2.224
1.482
0.741
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


102.887
88.189
73.491
58.793
44.095
29.396
14.698
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

ANNEX D: Head-front SAR Measurement

136.05 MHz W	- 0.942 (1.885) W/Kg
155.05 MHz W	- 1.904 (3.809) W/Kg
173.95 MHz W	- 2.923 (5.847) W/Kg
136.05 MHz N	- 1.007 (2.015) W/Kg
155.05 MHz N	- 2.250 (4.501) W/Kg
173.95 MHz N	- 3.138 (6.276) W/Kg

* The SAR Measurement inside the parenthesis indicates the reading before 50 % duty factor is applied for the half-duplex type PTT.

Test Information

Date : 11/20/00
Time : 3:25:22 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 136.05 W
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Head - Front	**Dielectric Constant**	: 62.8
Simulated Tissue	: Brain	**Conductivity**	: 0.50

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.98
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.414	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.096

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

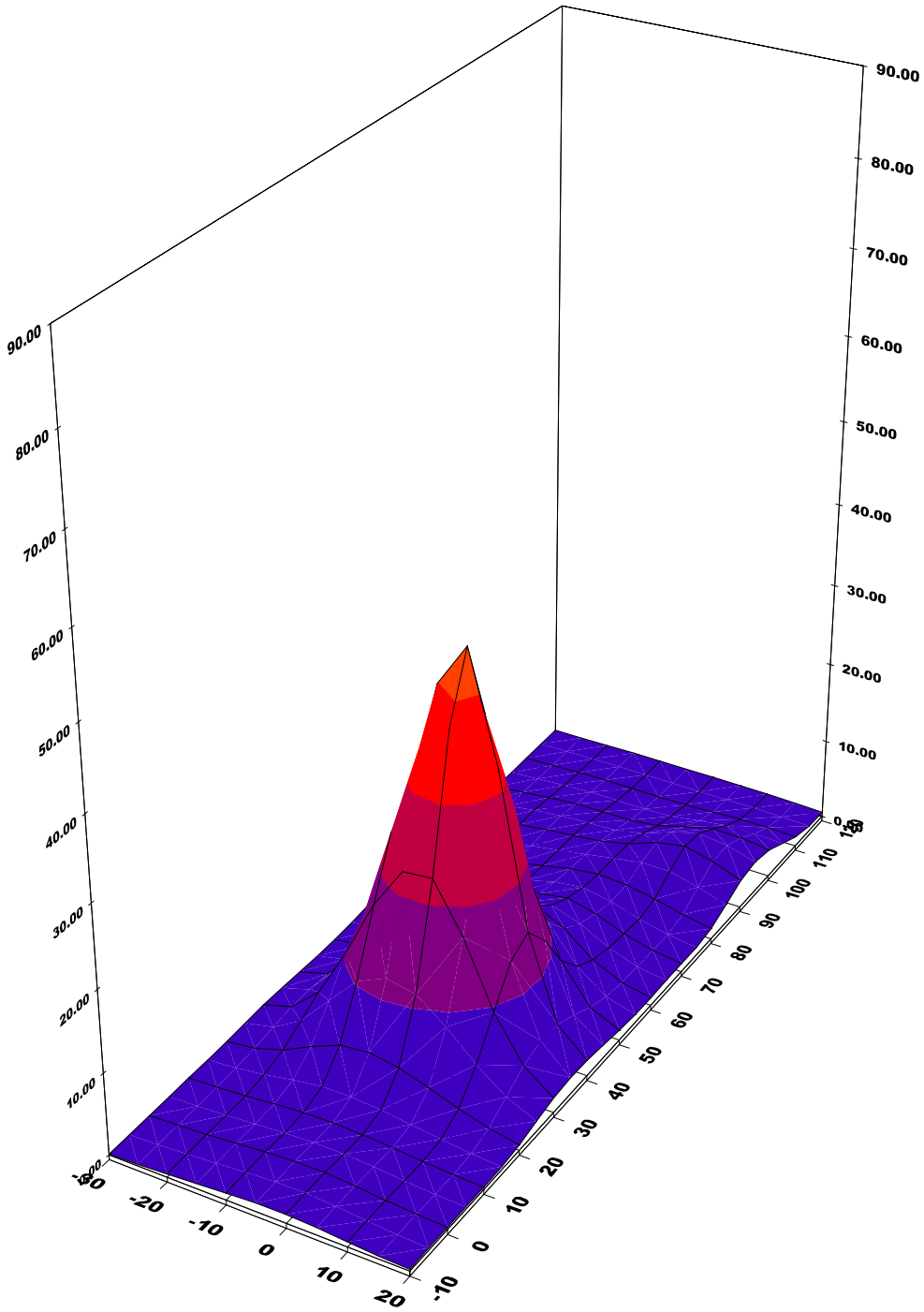
Location of Maximum Field :

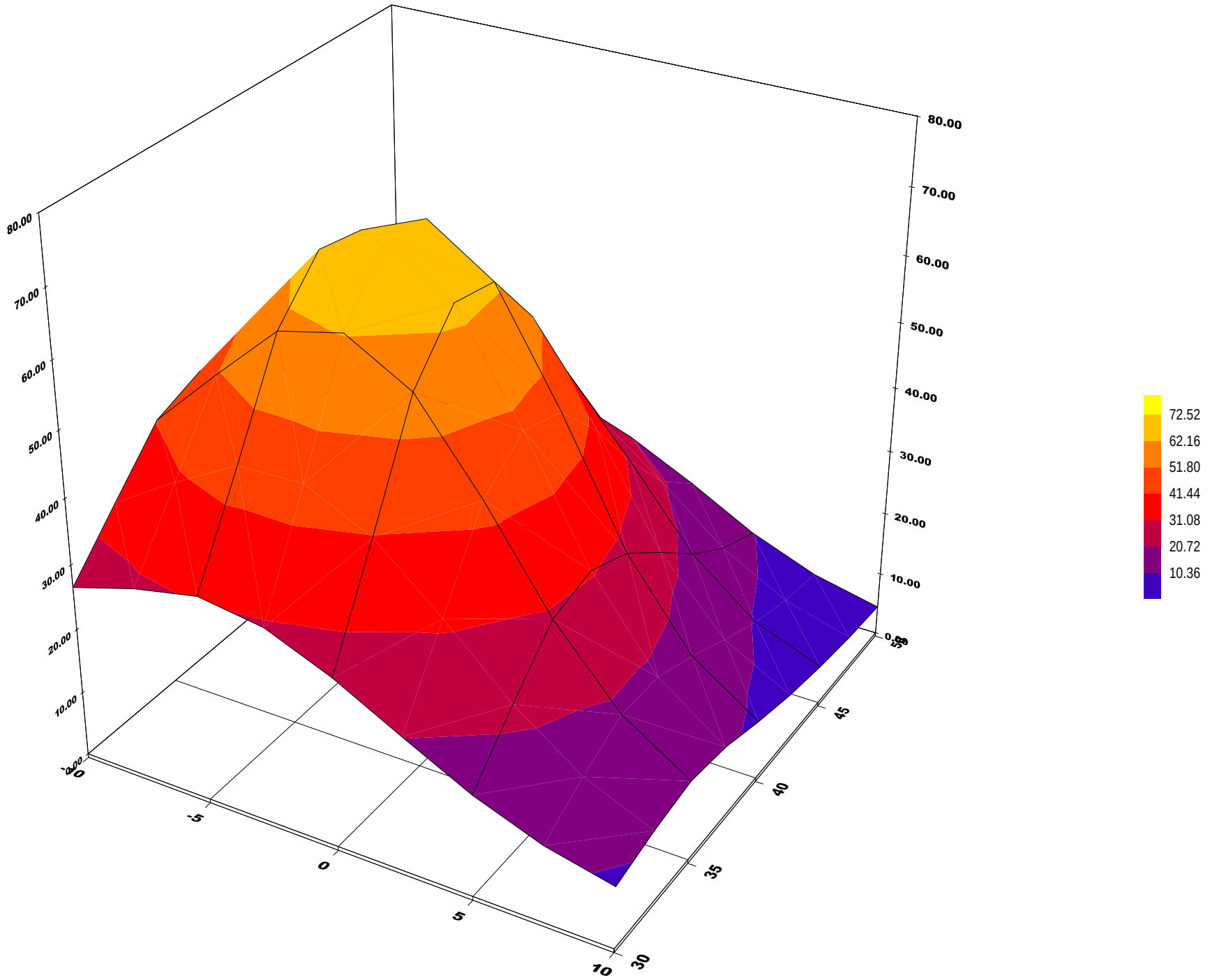
X = 0 Y = 40

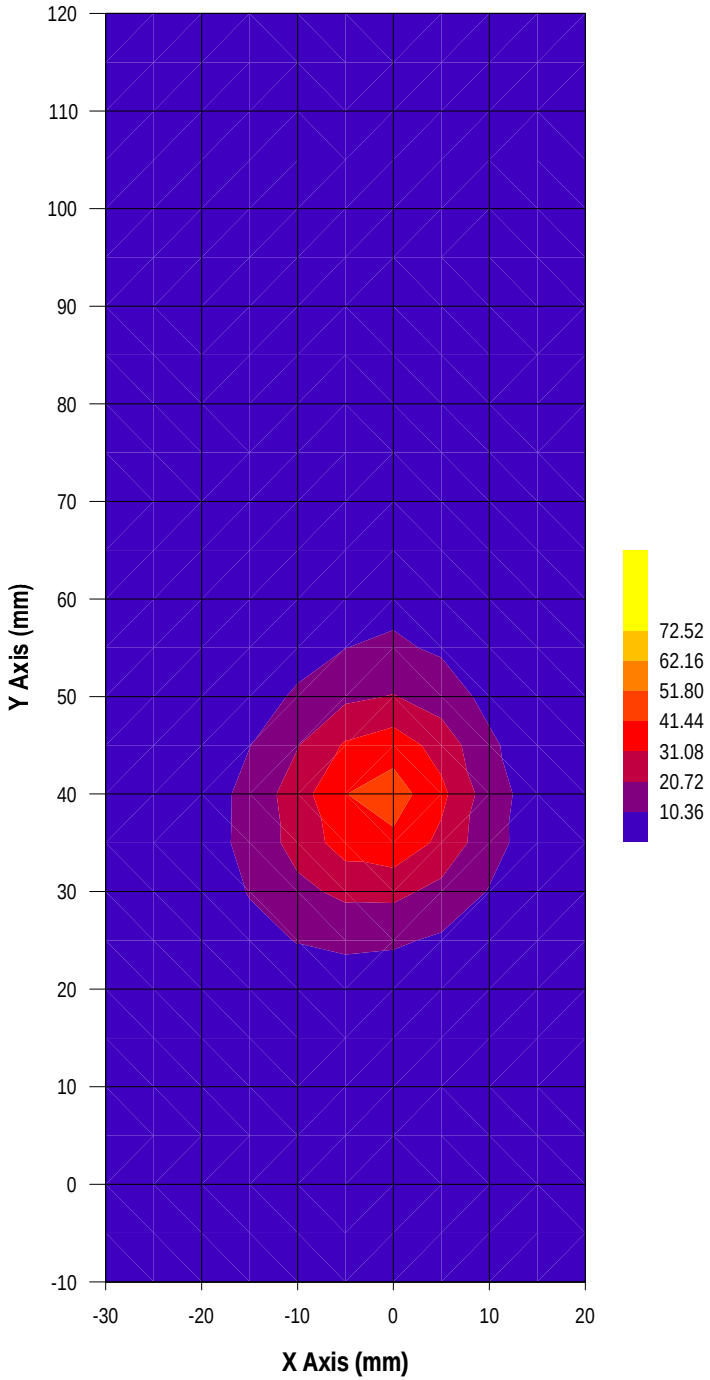
Measured Values (mV) :

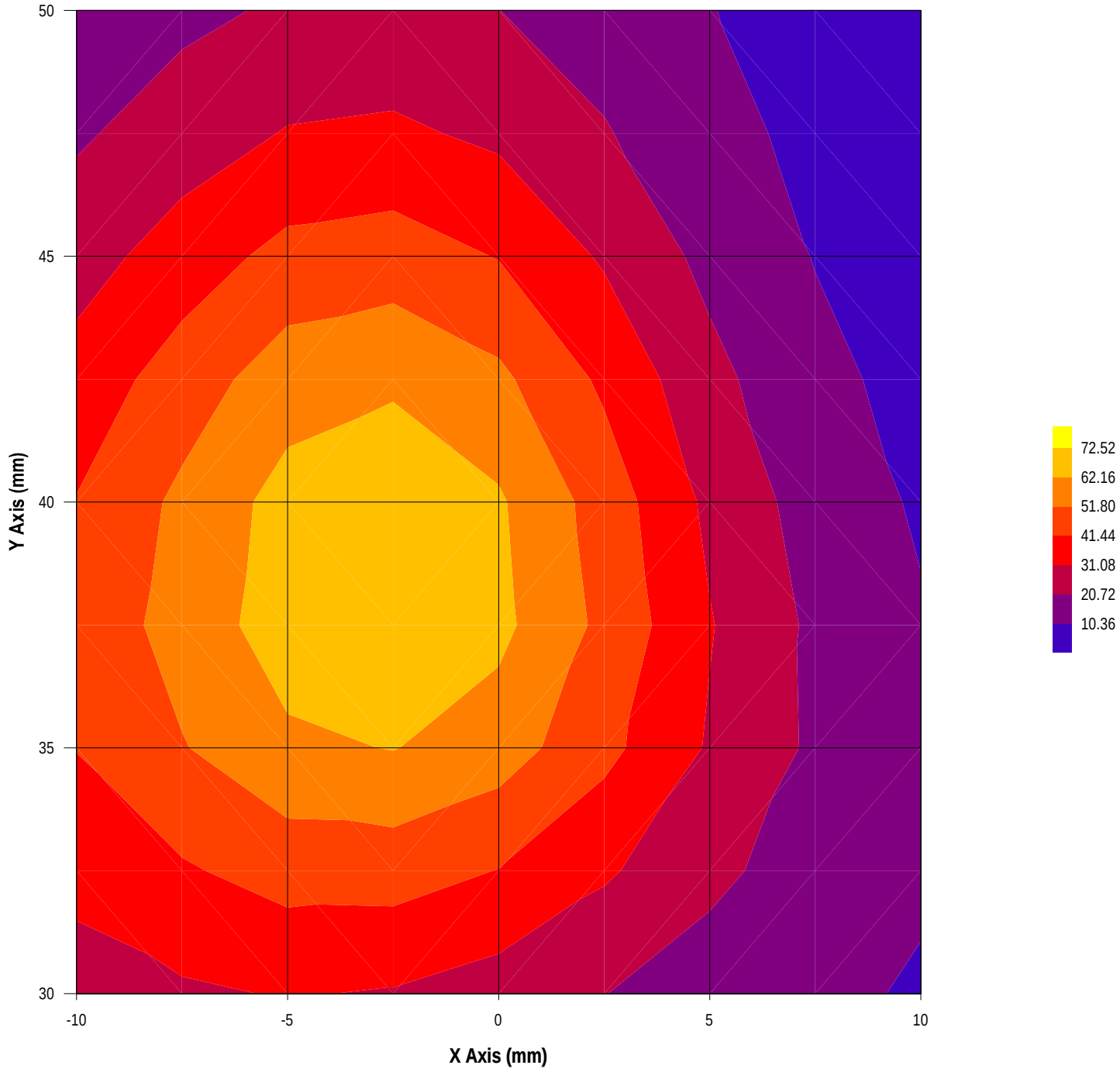
78.199	60.570	39.877	29.133	23.753	19.713
16.885	14.742	13.154	11.530	10.158	

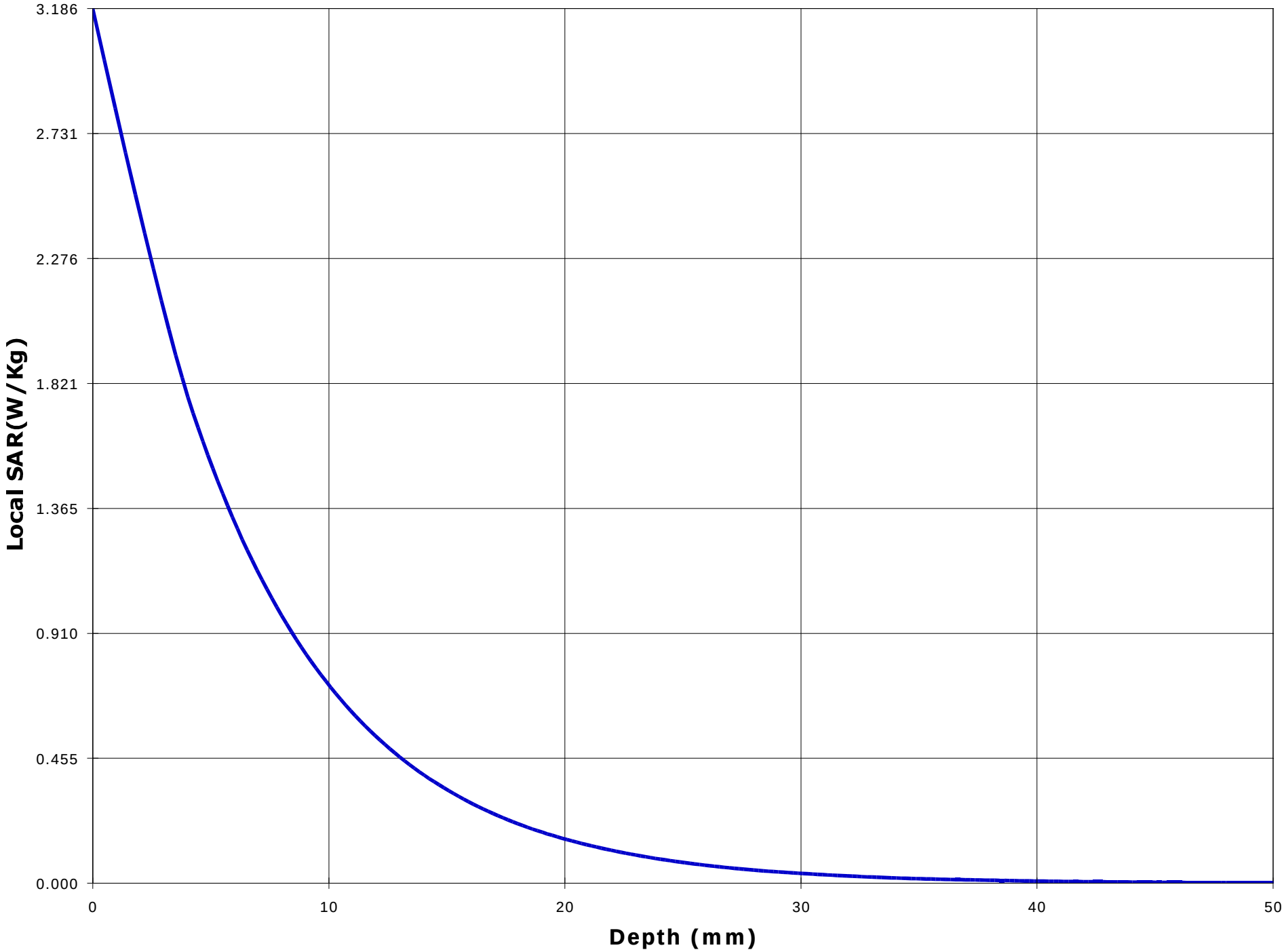
Peak Voltage (mV) : 83.075 **1 Cm Voltage (mV)** : 18.497 **SAR (W/Kg)** : 1.885

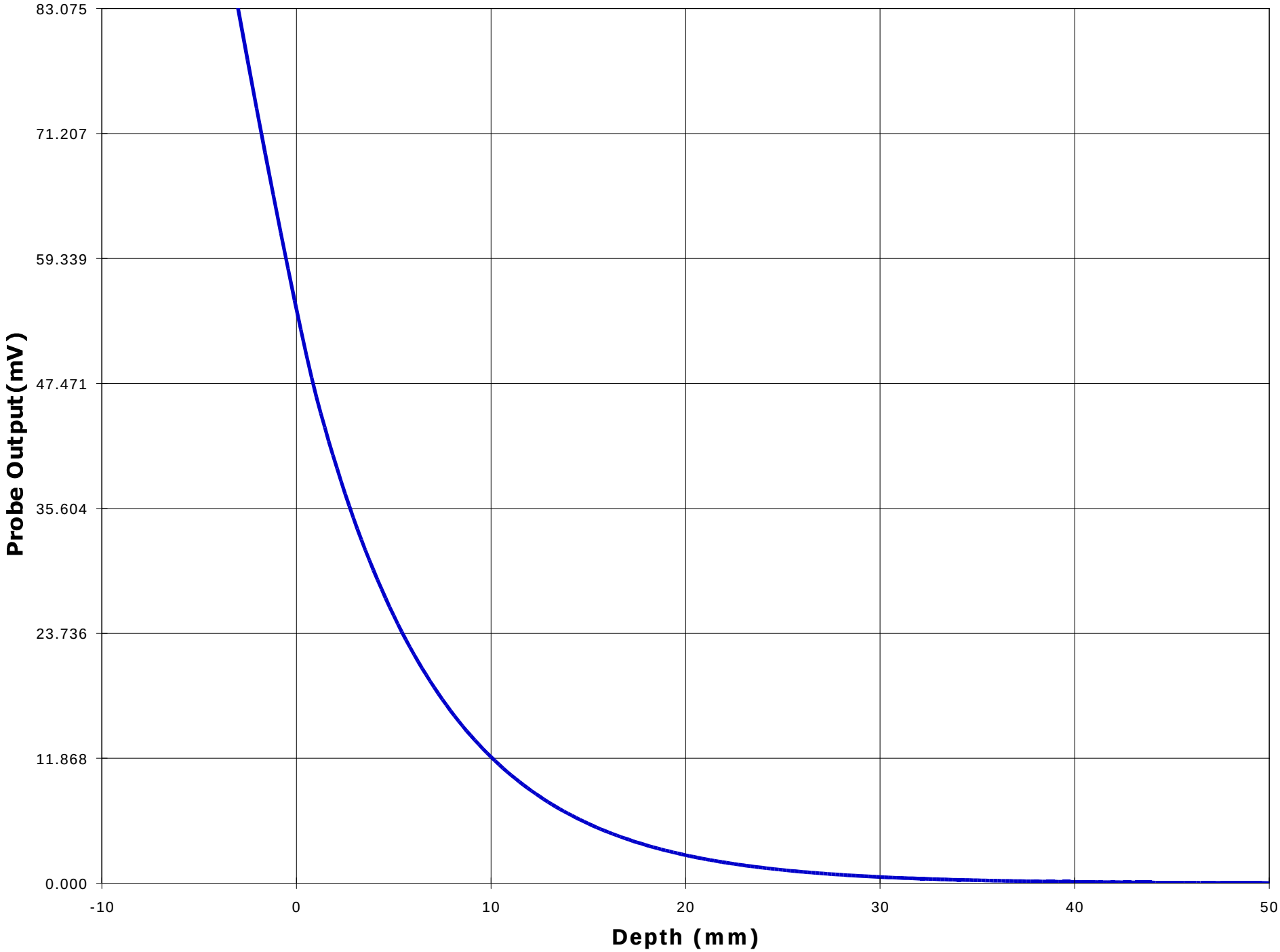

90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
-30
-20
-10
0
10
20
-10
0
10
20
30
40
50
60
70
80
90
100
110
72.52
62.16
51.80
41.44
31.08
20.72
10.36


80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-5
0
5
10
30
35
40
45
72.52
62.16
51.80
41.44
31.08
20.72
10.36


120
110
100
90
80
70
60
50
40
30
20
10
0
-10
Y Axis (mm)
-30
-20
-10
0
10
20
X Axis (mm)
72.52
62.16
51.80
41.44
31.08
20.72
10.36


50
45
40
35
30
Y Axis (mm)
-10
-5
0
5
10
X Axis (mm)
72.52
62.16
51.80
41.44
31.08
20.72
10.36


3.186
2.731
2.276
1.821
1.365
0.910
0.455
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


83.075
71.207
59.339
47.471
35.604
23.736
11.868
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/20/00
Time : 3:49:00 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 155.05 W
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Head - Front	**Dielectric Constant**	: 62.8
Simulated Tissue	: Brain	**Conductivity**	: 0.50

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.95
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.414	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.065

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

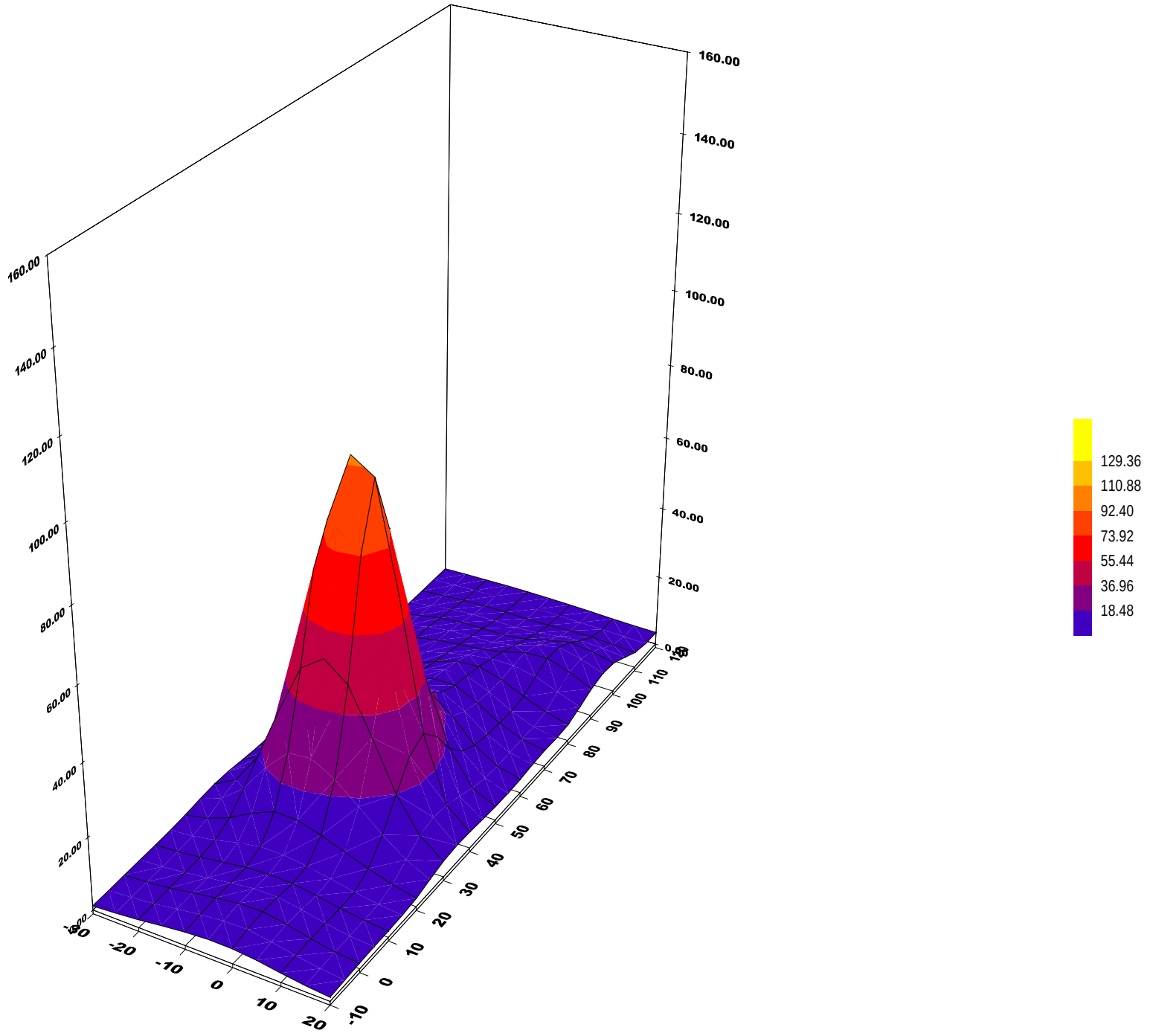
Location of Maximum Field :

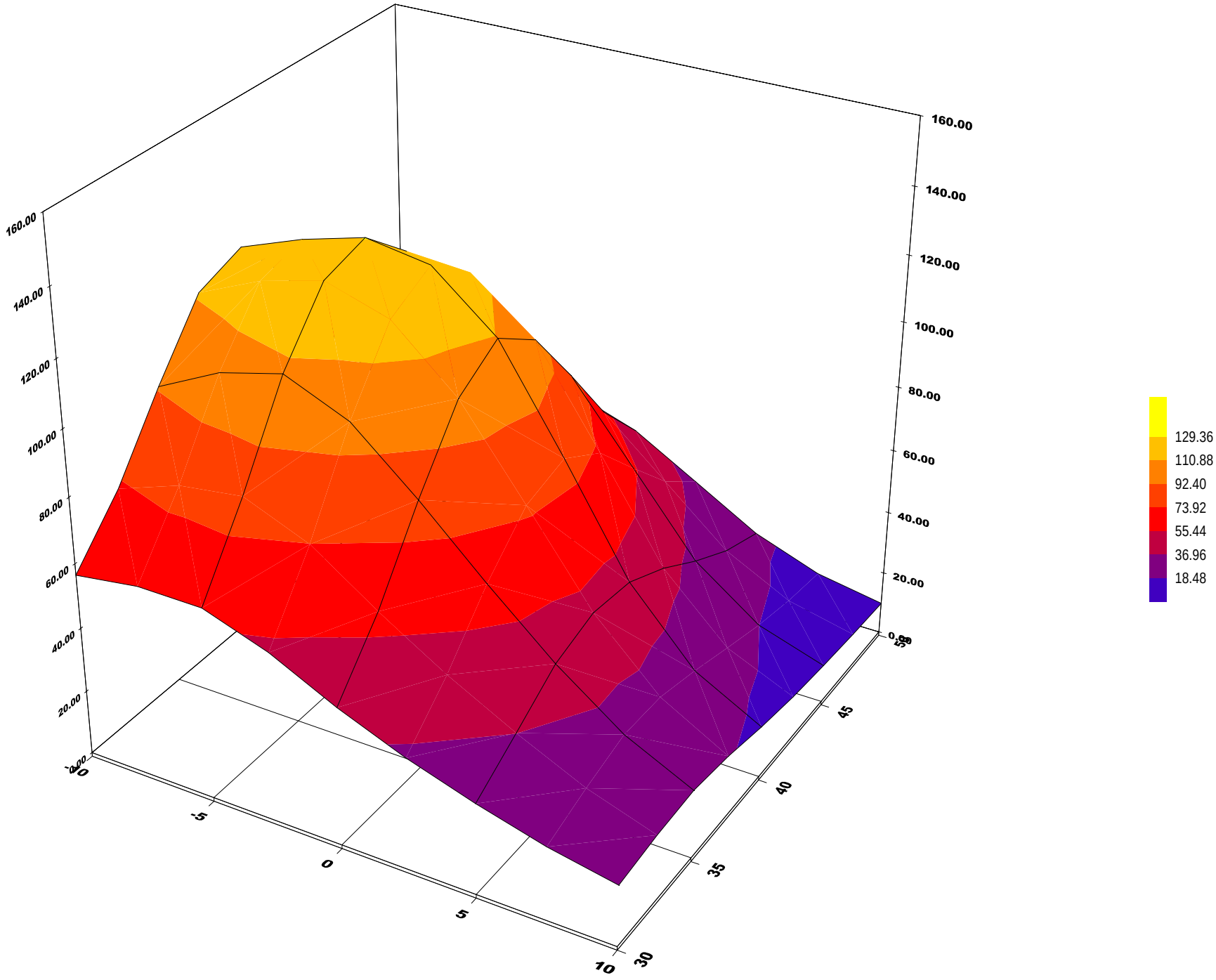
X = -5 Y = 40

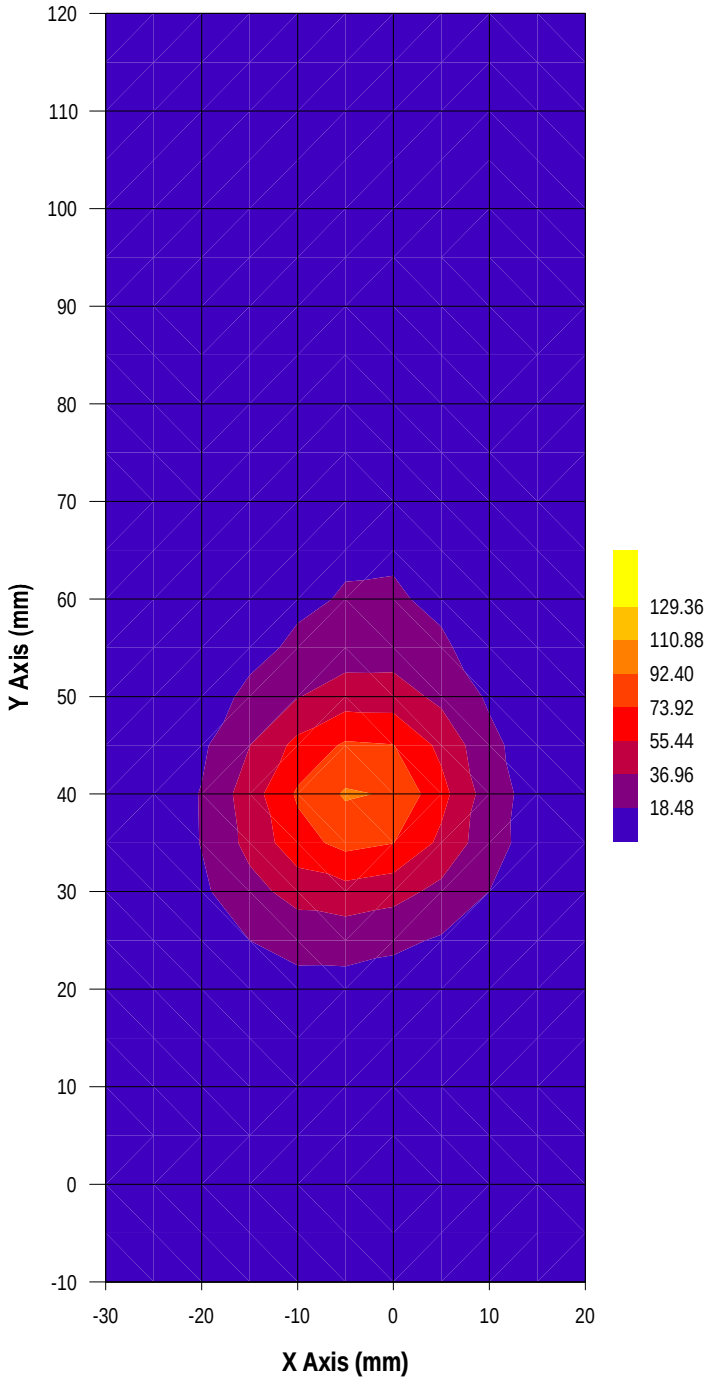
Measured Values (mV) :

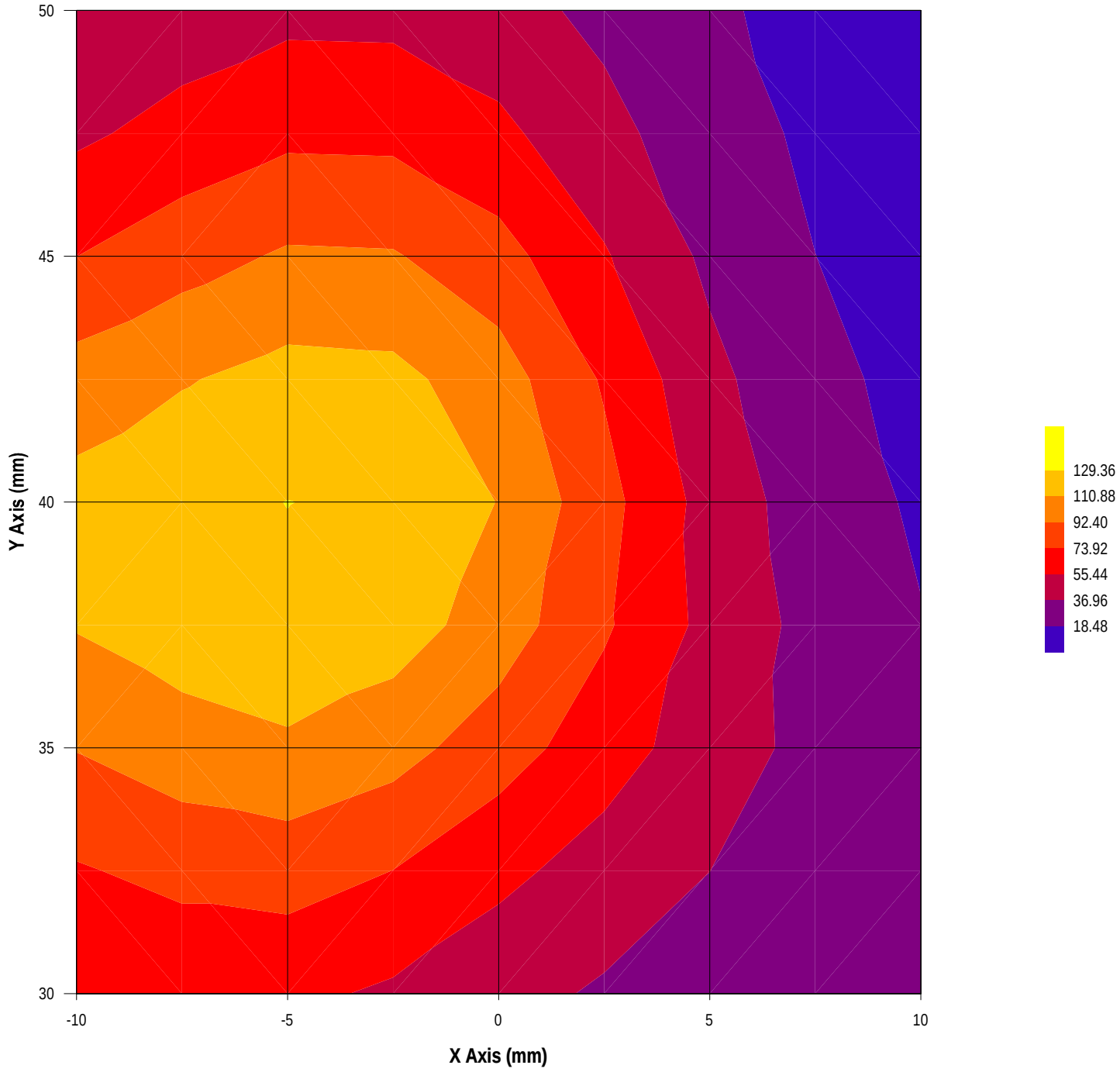
156.563	141.449	99.485	71.849	55.589	45.440
39.133	34.289	30.615	27.510	24.765	

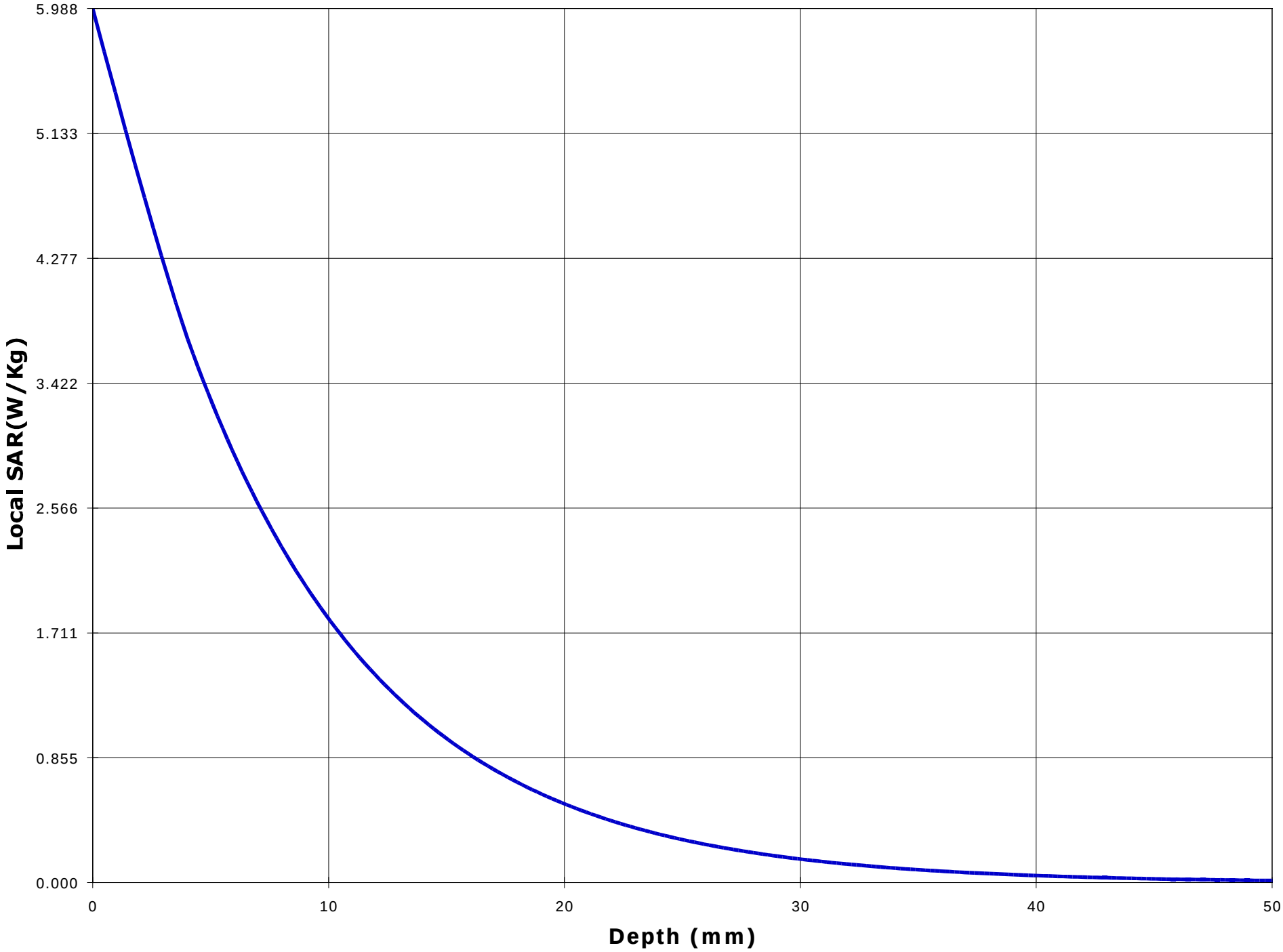
Peak Voltage (mV) : 156.141 **1 Cm Voltage (mV)** : 46.610 **SAR (W/Kg)** : 3.809

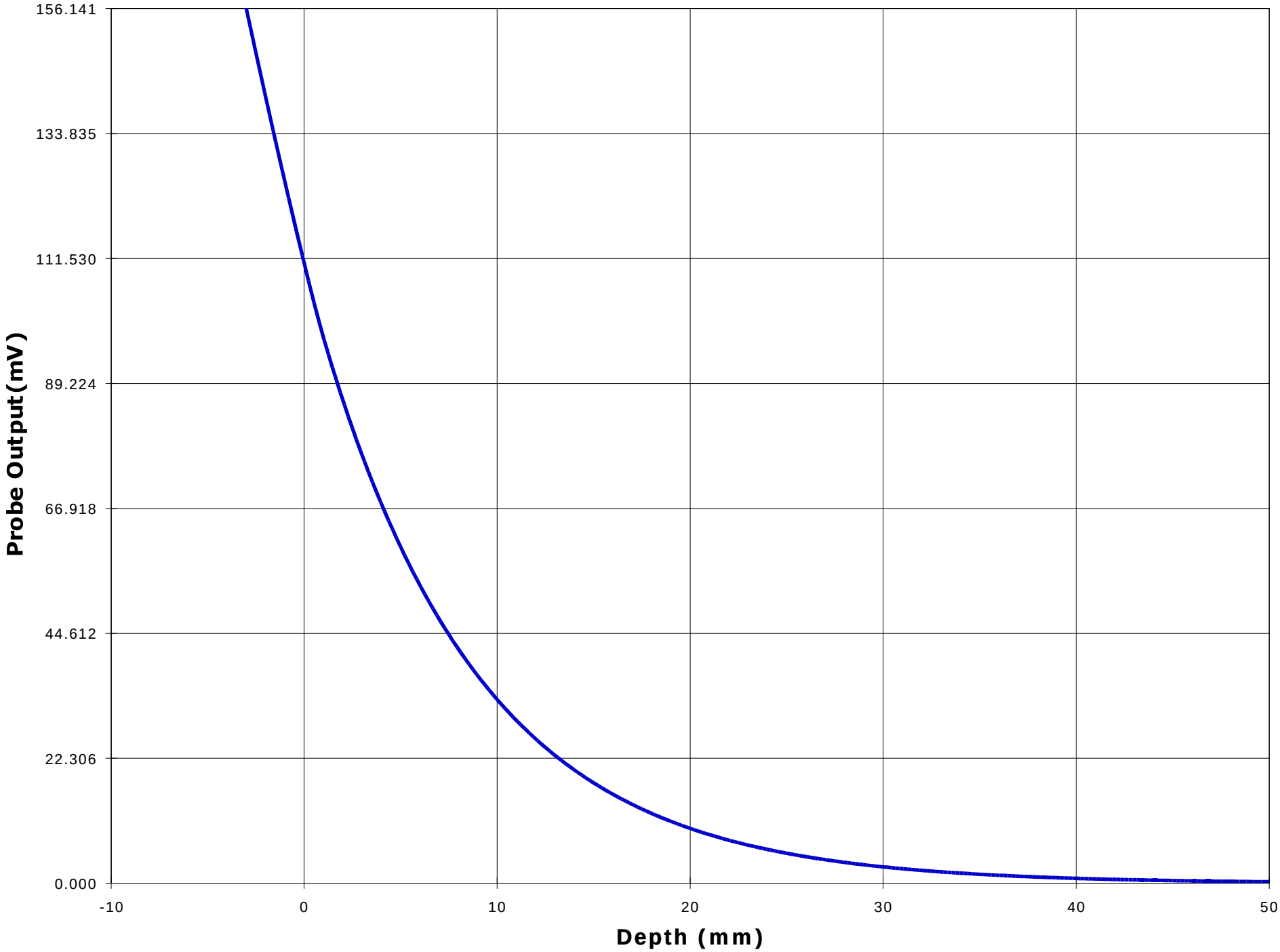

160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
-30
-20
-10
0
10
20
-10
0
10
20
30
40
50
60
70
80
90
100
110
129.36
110.88
92.40
73.92
55.44
36.96
18.48


160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
-10
-5
0
5
10
30
35
40
45
50
129.36
110.88
92.40
73.92
55.44
36.96
18.48


120
110
100
90
80
70
60
50
40
30
20
10
0
-10
Y Axis (mm)
-30
-20
-10
0
10
20
X Axis (mm)
129.36
110.88
92.40
73.92
55.44
36.96
18.48


50
45
40
35
30
Y Axis (mm)
-10
-5
0
5
10
X Axis (mm)
129.36
110.88
92.40
73.92
55.44
36.96
18.48


5.988
5.133
4.277
3.422
2.566
1.711
0.855
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


156.141
133.835
111.530
89.224
66.918
44.612
22.306
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/20/00
Time : 4:09:49 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 173.95 W
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Head - Front	**Dielectric Constant**	: 62.8
Simulated Tissue	: Brain	**Conductivity**	: 0.50

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W)**	: 4.92
Sensor Factor (mV)	: 10.8	**(conducted)**	
Conversion Factor	: 0.414	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.035

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

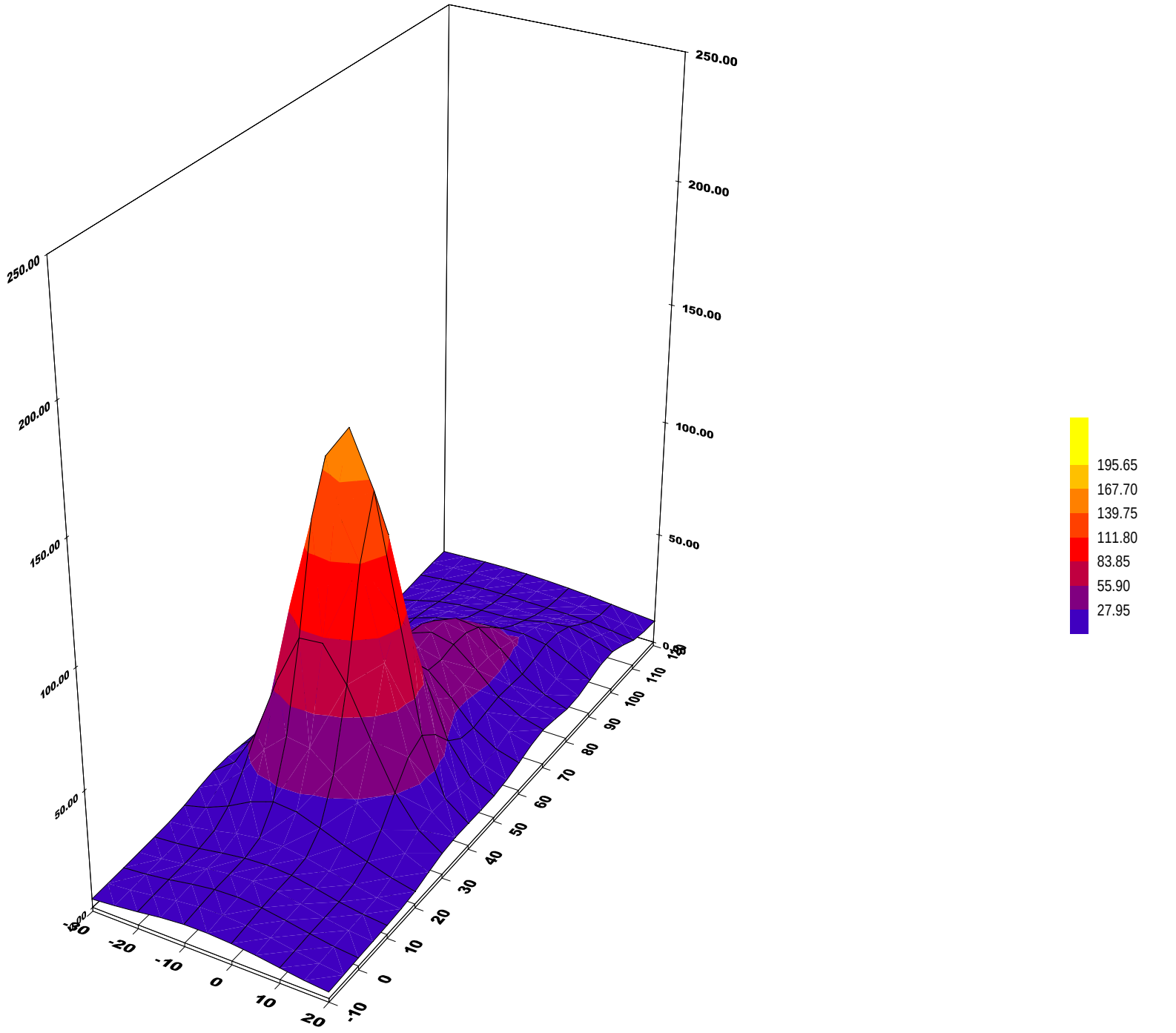
Location of Maximum Field :

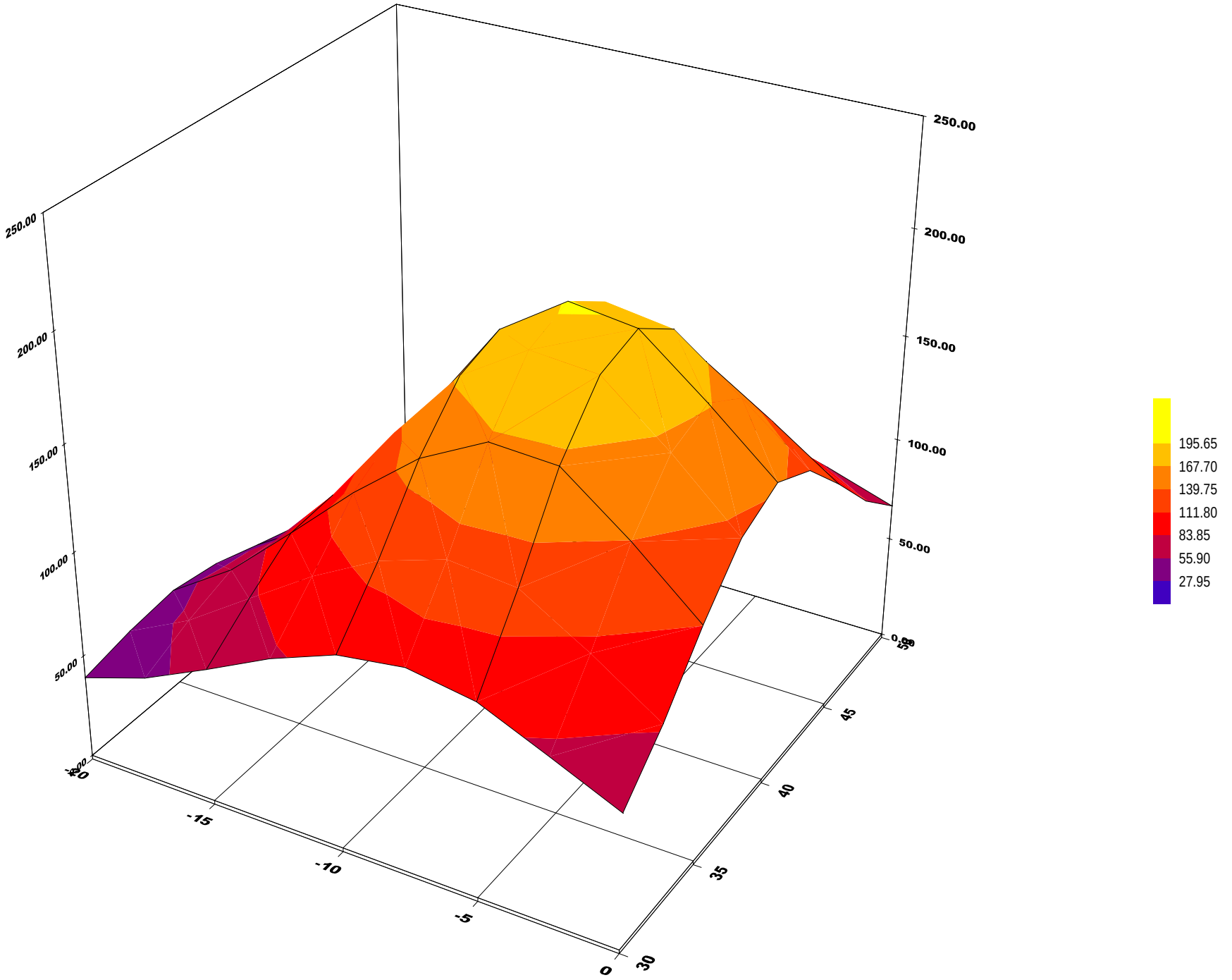
X = -5 Y = 40

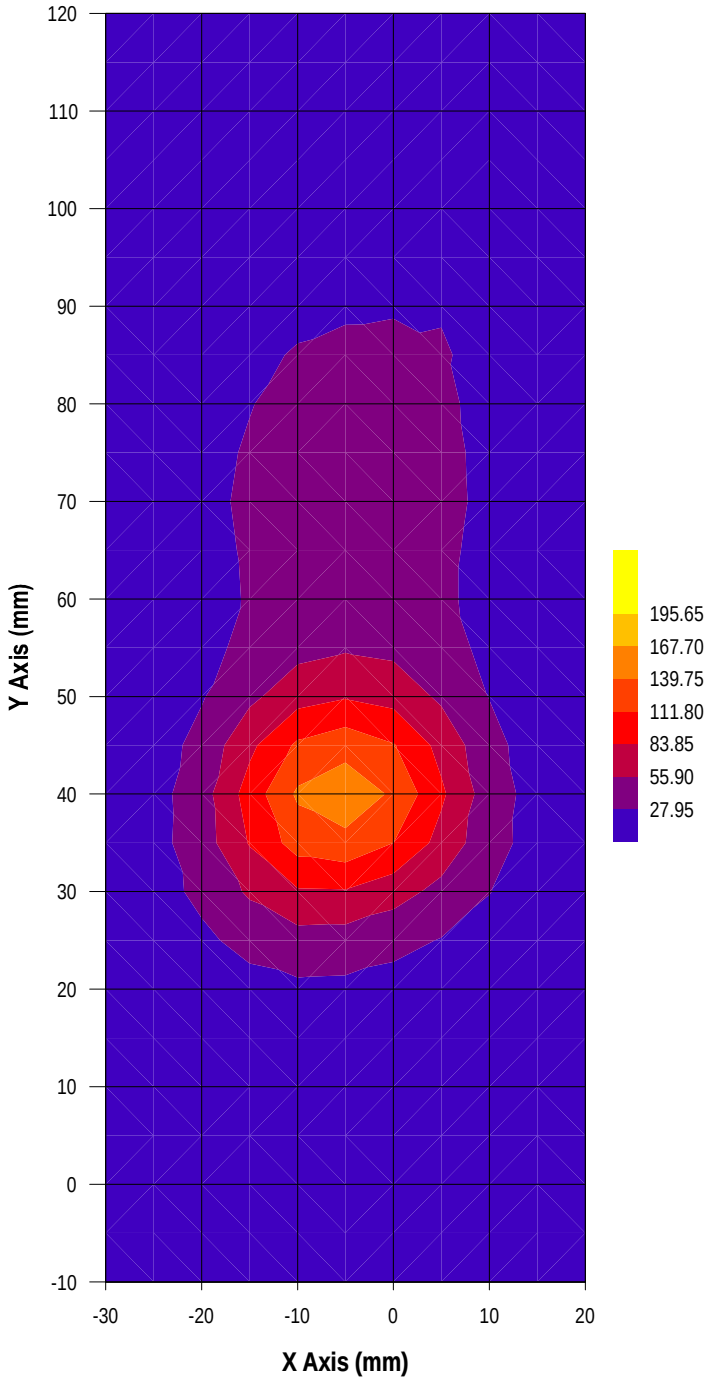
Measured Values (mV) :

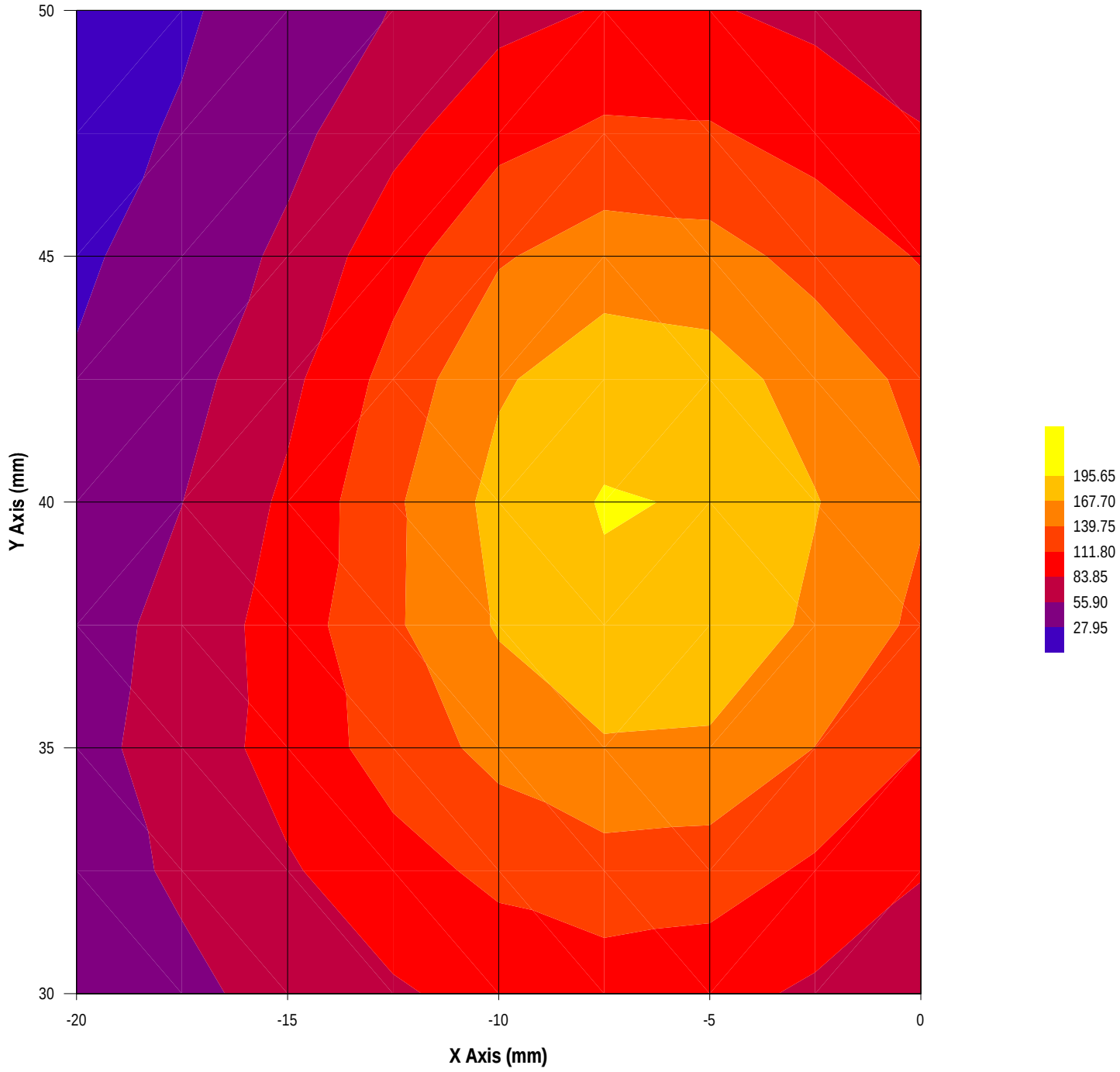
221.336	193.410	137.092	101.936	83.077	71.583
63.389	55.937	50.482	45.735	41.382	

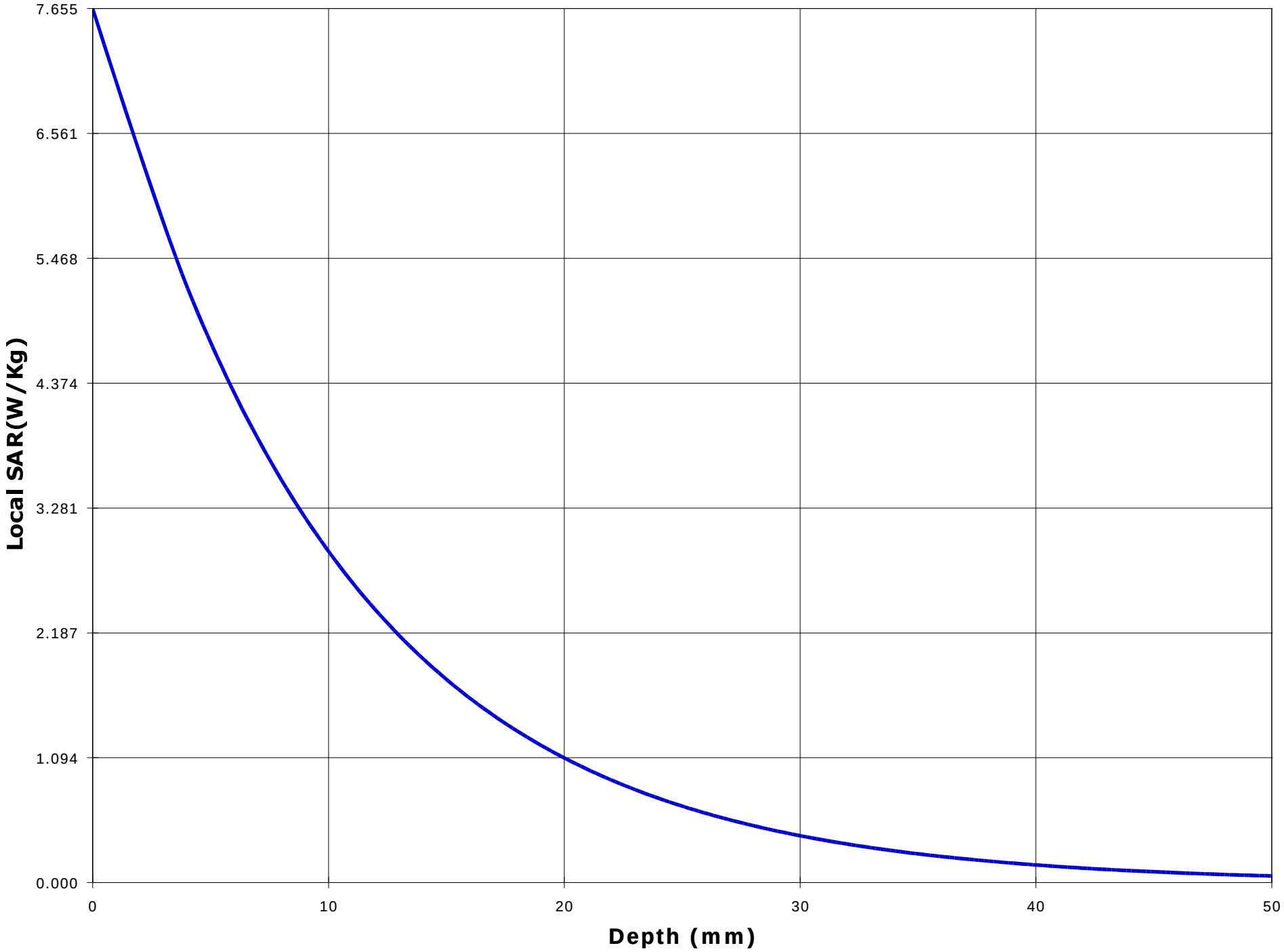
Peak Voltage (mV) : 199.601 **1 Cm Voltage (mV)** : 75.107 **SAR (W/Kg)** : 5.847

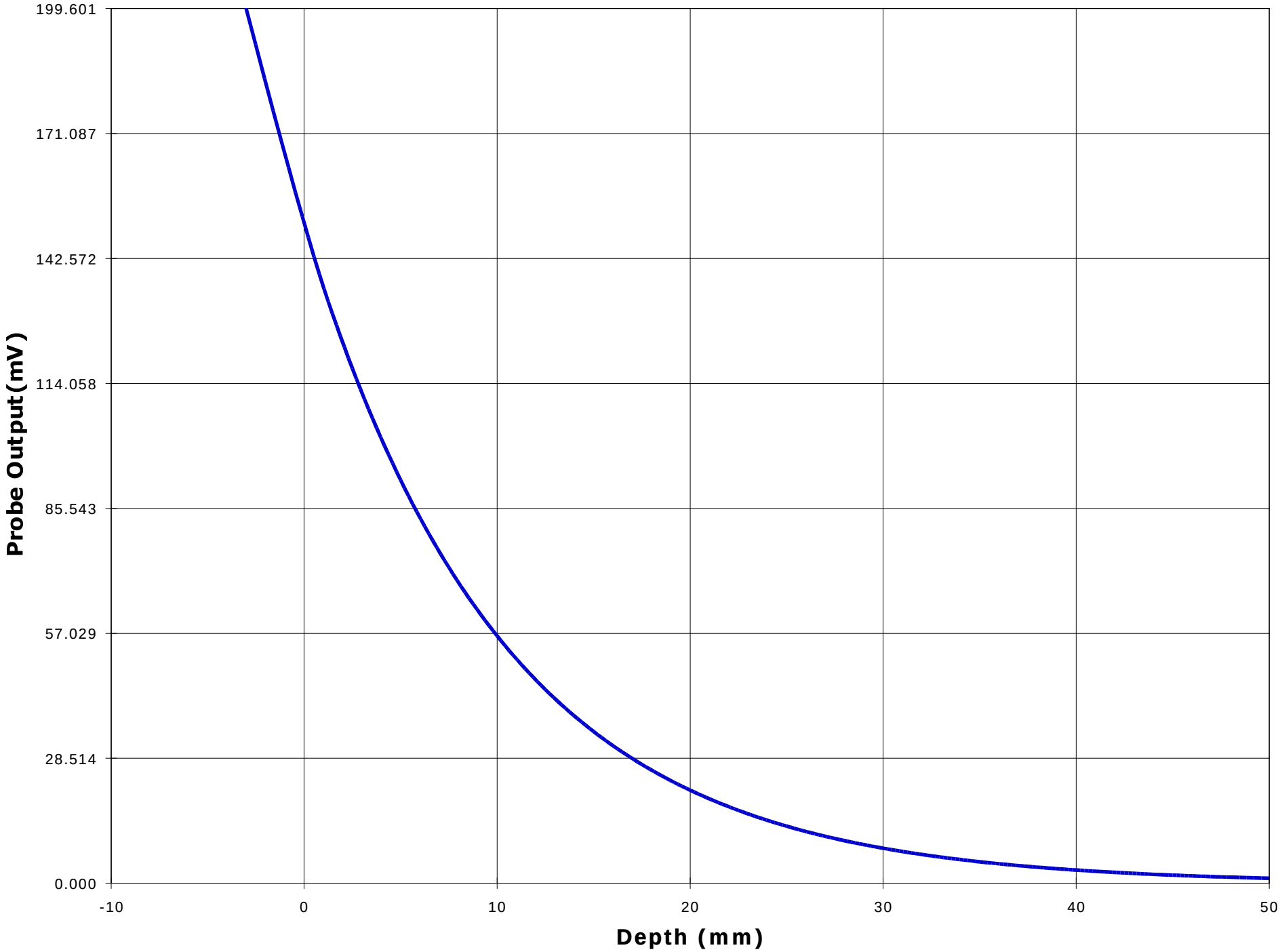

250.00
200.00
150.00
100.00
50.00
-30
-20
-10
0
10
20
-10
0
10
20
30
40
50
60
70
80
90
100
110
195.65
167.70
139.75
111.80
83.85
55.90
27.95


250.00
200.00
150.00
100.00
50.00
250.00
200.00
150.00
100.00
50.00
-20
-15
-10
-5
0
30
35
40
45
195.65
167.70
139.75
111.80
83.85
55.90
27.95


120
110
100
90
80
70
60
50
40
30
20
10
0
-10
Y Axis (mm)
-30
-20
-10
0
10
20
X Axis (mm)
195.65
167.70
139.75
111.80
83.85
55.90
27.95


50
45
40
35
30
Y Axis (mm)
-20
-15
-10
-5
0
X Axis (mm)
195.65
167.70
139.75
111.80
83.85
55.90
27.95


7.655
6.561
5.468
4.374
3.281
2.187
1.094
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


199.601
171.087
142.572
114.058
85.543
57.029
28.514
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/20/00
Time : 4:35:15 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 136.05 N
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Head - Front	**Dielectric Constant**	: 62.8
Simulated Tissue	: Brain	**Conductivity**	: 0.50

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W)**	: 4.91
Sensor Factor (mV)	: 10.8	**(conducted)**	
Conversion Factor	: 0.414	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.024

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

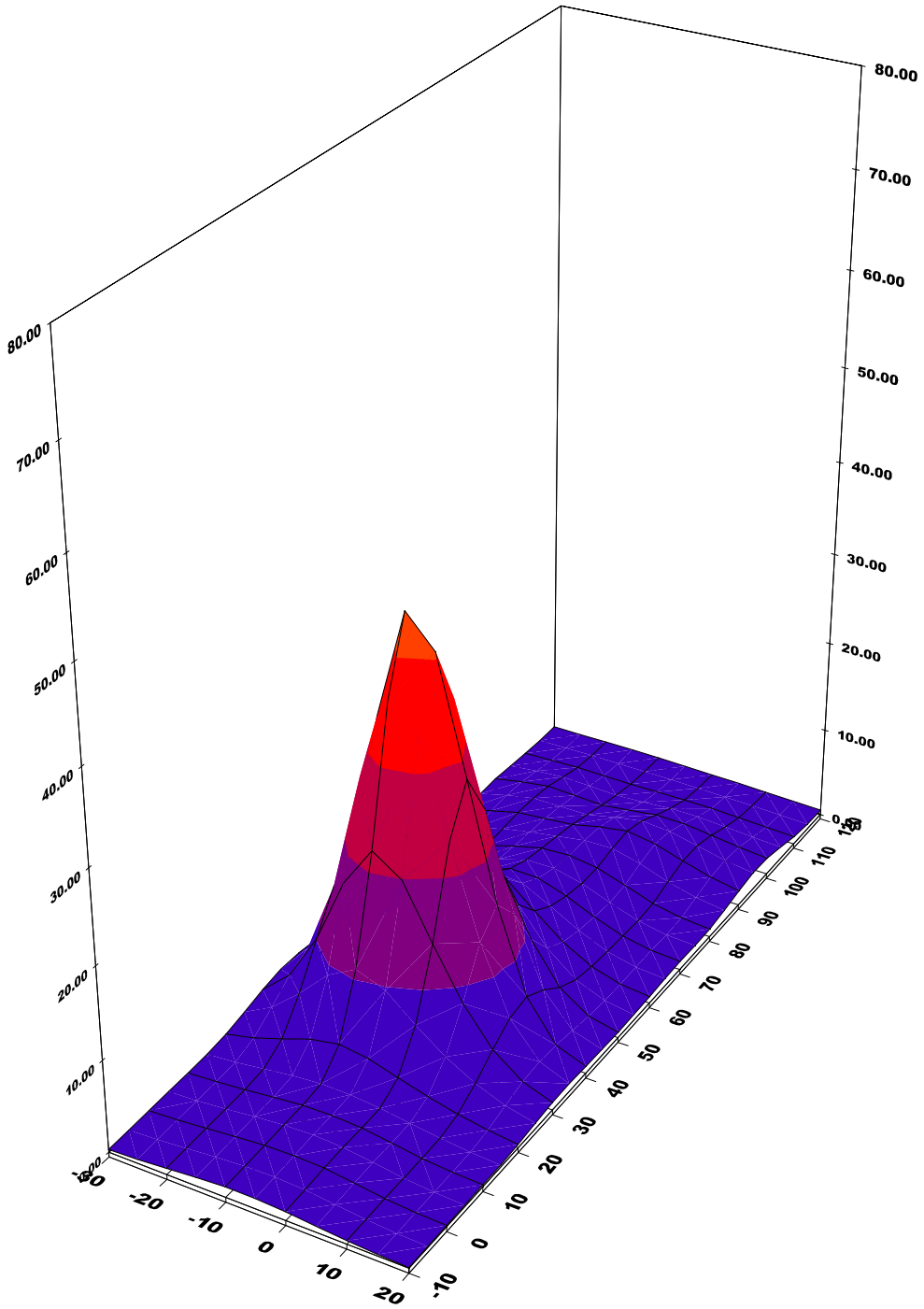
Location of Maximum Field :

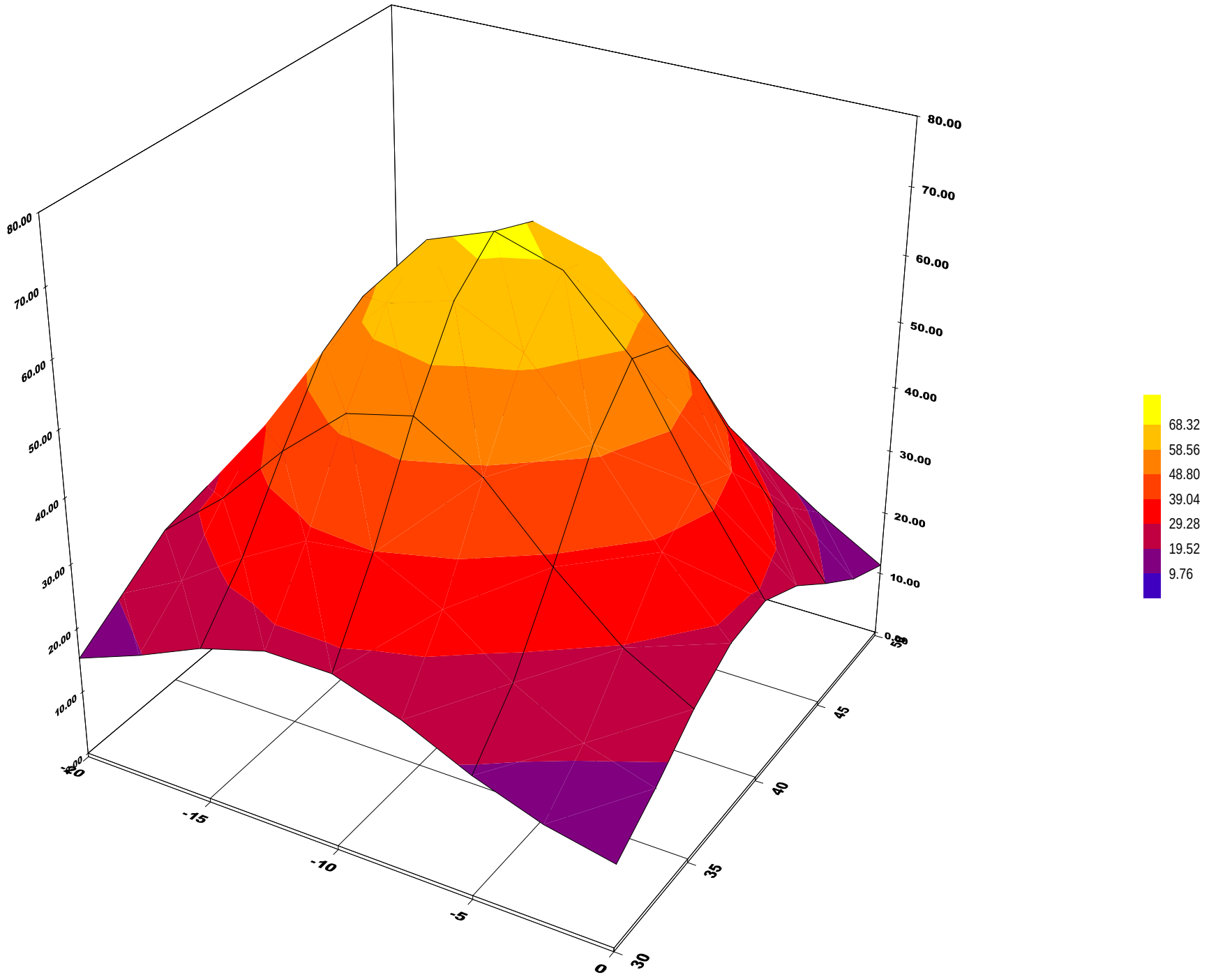
X = -10 Y = 40

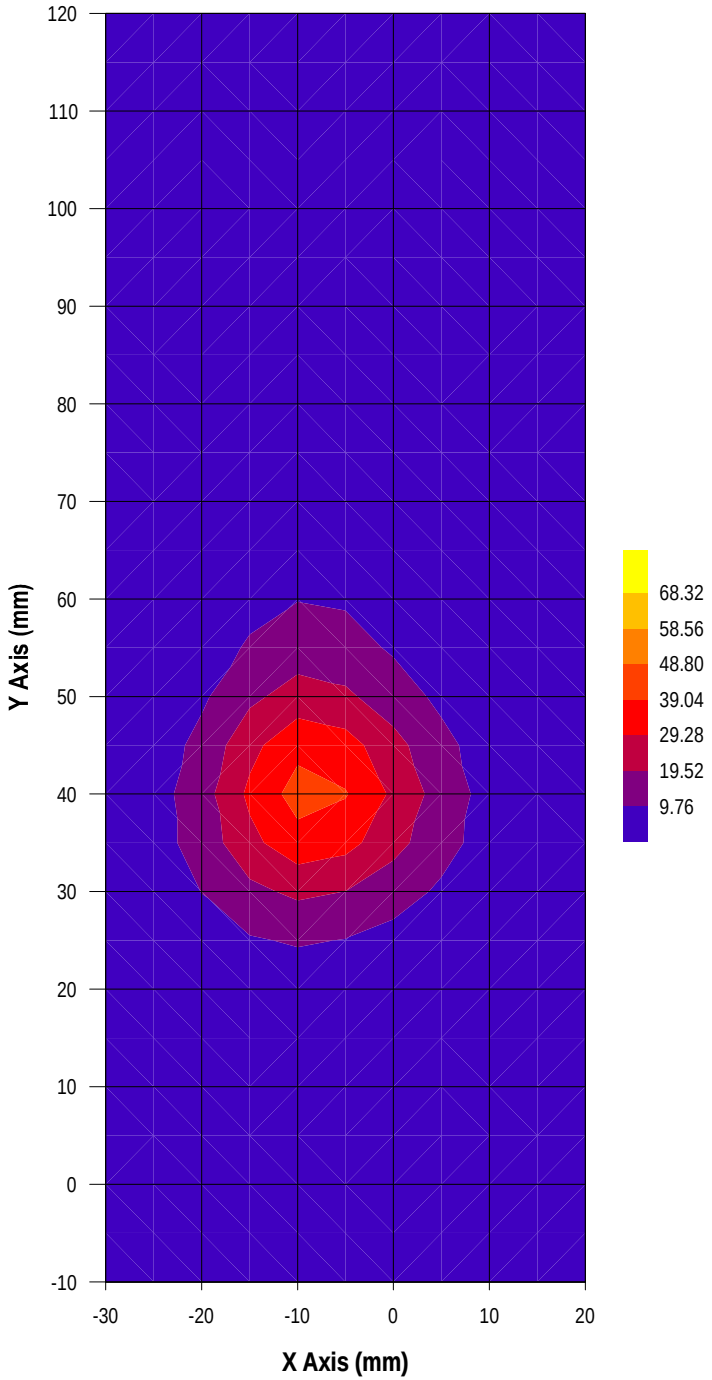
Measured Values (mV) :

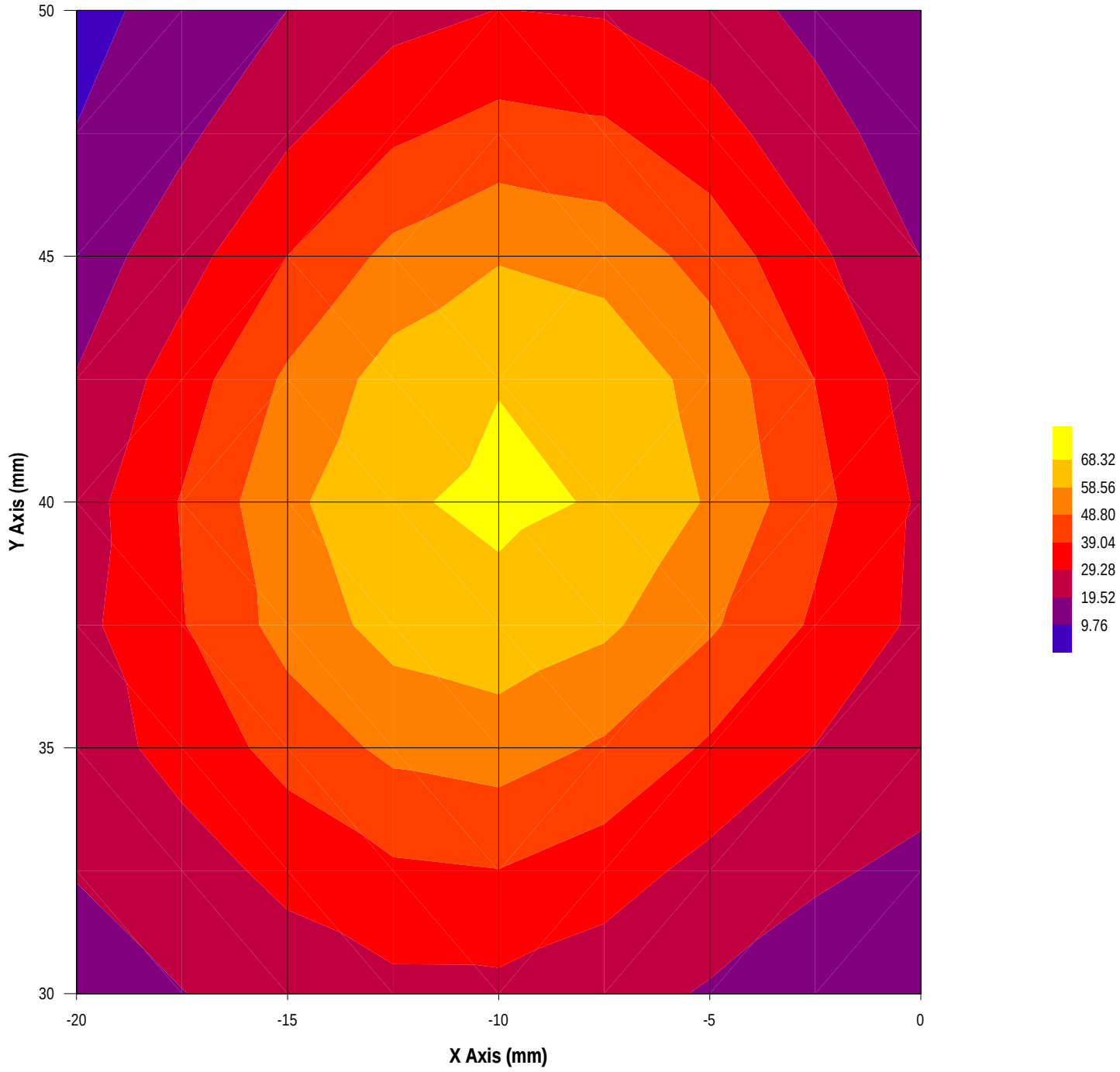
77.094	67.398	43.460	32.093	25.799	21.406
18.204	15.871	13.899	12.289	10.858	

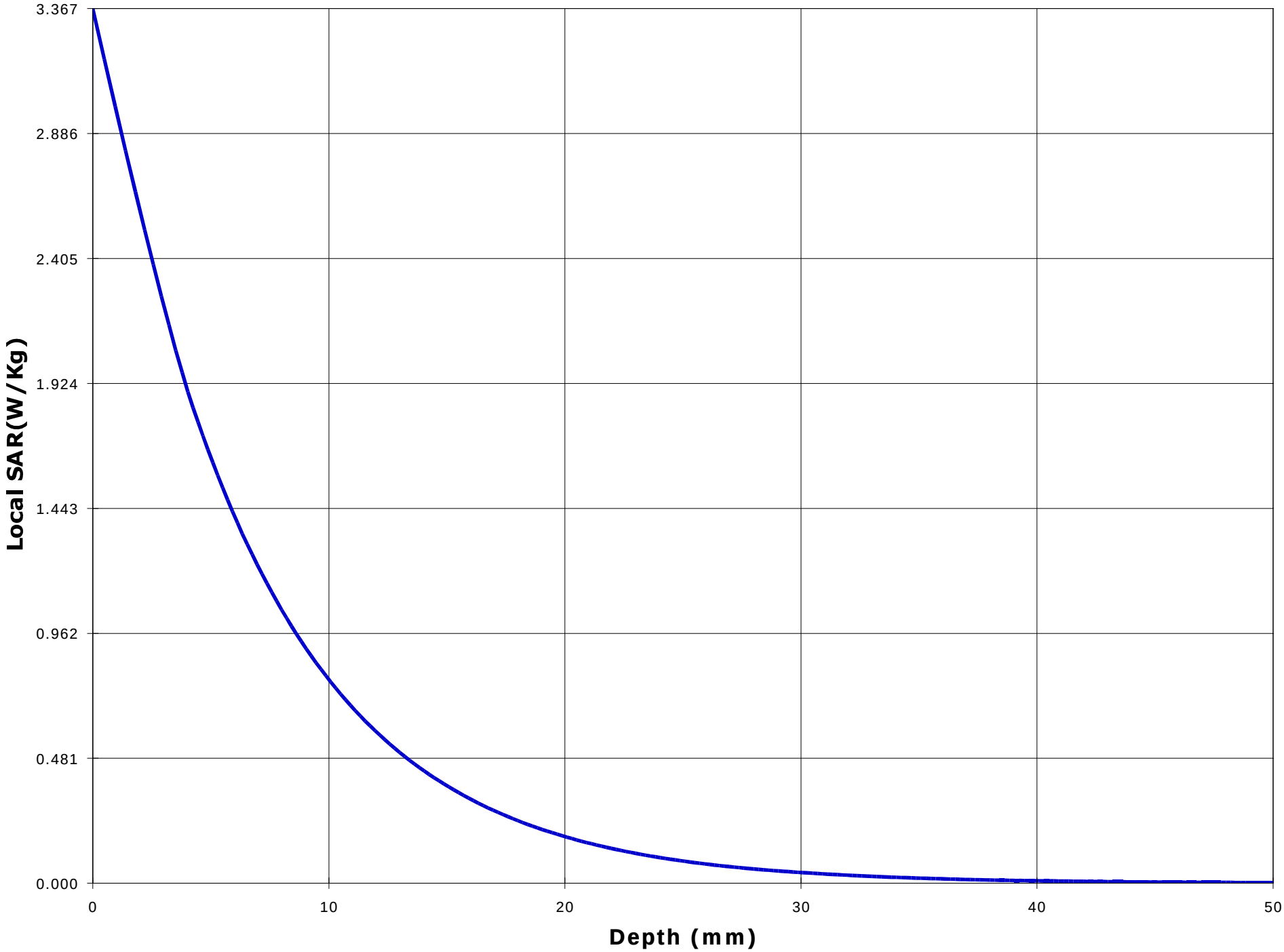
Peak Voltage (mV) : 87.792 **1 Cm Voltage (mV)** : 20.103 **SAR (W/Kg)** : 2.015

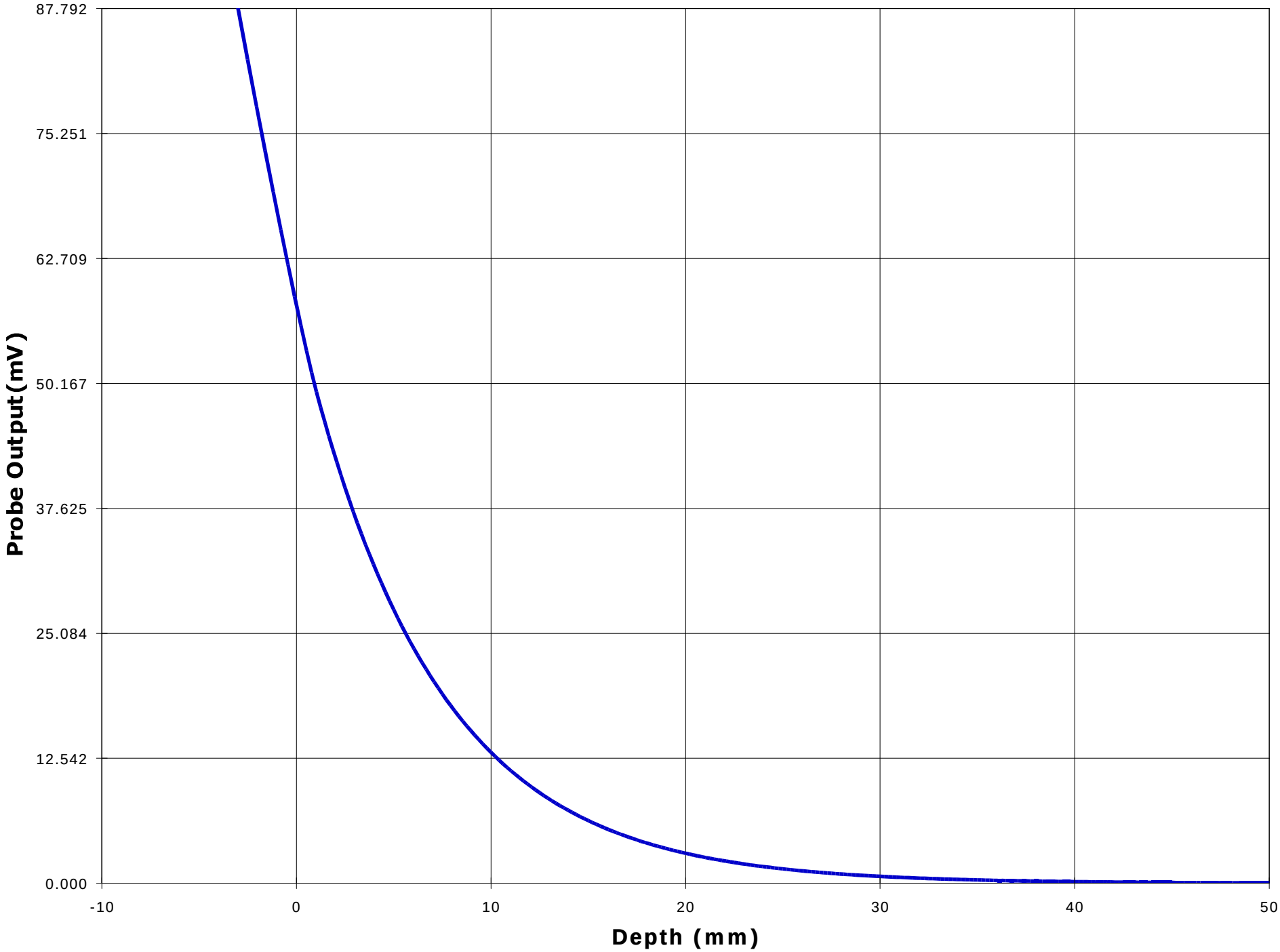

80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
-30
-20
-10
0
10
20
-10
0
10
20
30
40
50
60
70
80
90
100
110
68.32
58.56
48.80
39.04
29.28
19.52
9.76


80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
-20
-15
-10
-5
0
30
35
40
45
68.32
58.56
48.80
39.04
29.28
19.52
9.76


120
110
100
90
80
70
60
50
40
30
20
10
0
-10
Y Axis (mm)
-30
-20
-10
0
10
20
X Axis (mm)
68.32
58.56
48.80
39.04
29.28
19.52
9.76


50
45
40
35
30
Y Axis (mm)
-20
-15
-10
-5
0
X Axis (mm)
68.32
58.56
48.80
39.04
29.28
19.52
9.76


3.367
2.886
2.405
1.924
1.443
0.962
0.481
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


87.792
75.251
62.709
50.167
37.625
25.084
12.542
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/20/00
Time : 5:17:20 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 155.05 N
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Head - Front	**Dielectric Constant**	: 62.8
Simulated Tissue	: Brain	**Conductivity**	: 0.50

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W) (conducted)**	: 4.96
Sensor Factor (mV)	: 10.8		
Conversion Factor	: 0.414	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.076

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

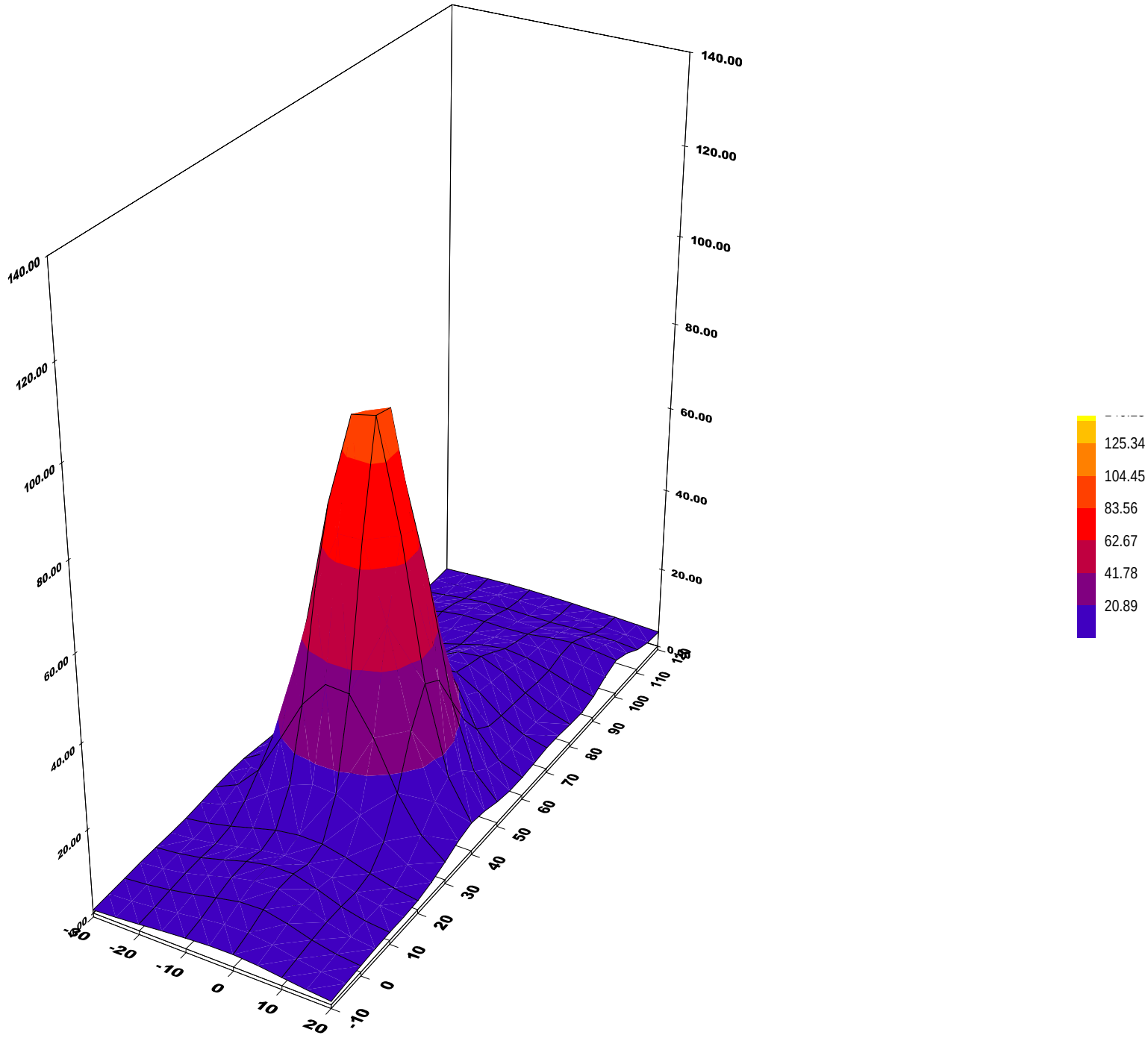
Location of Maximum Field :

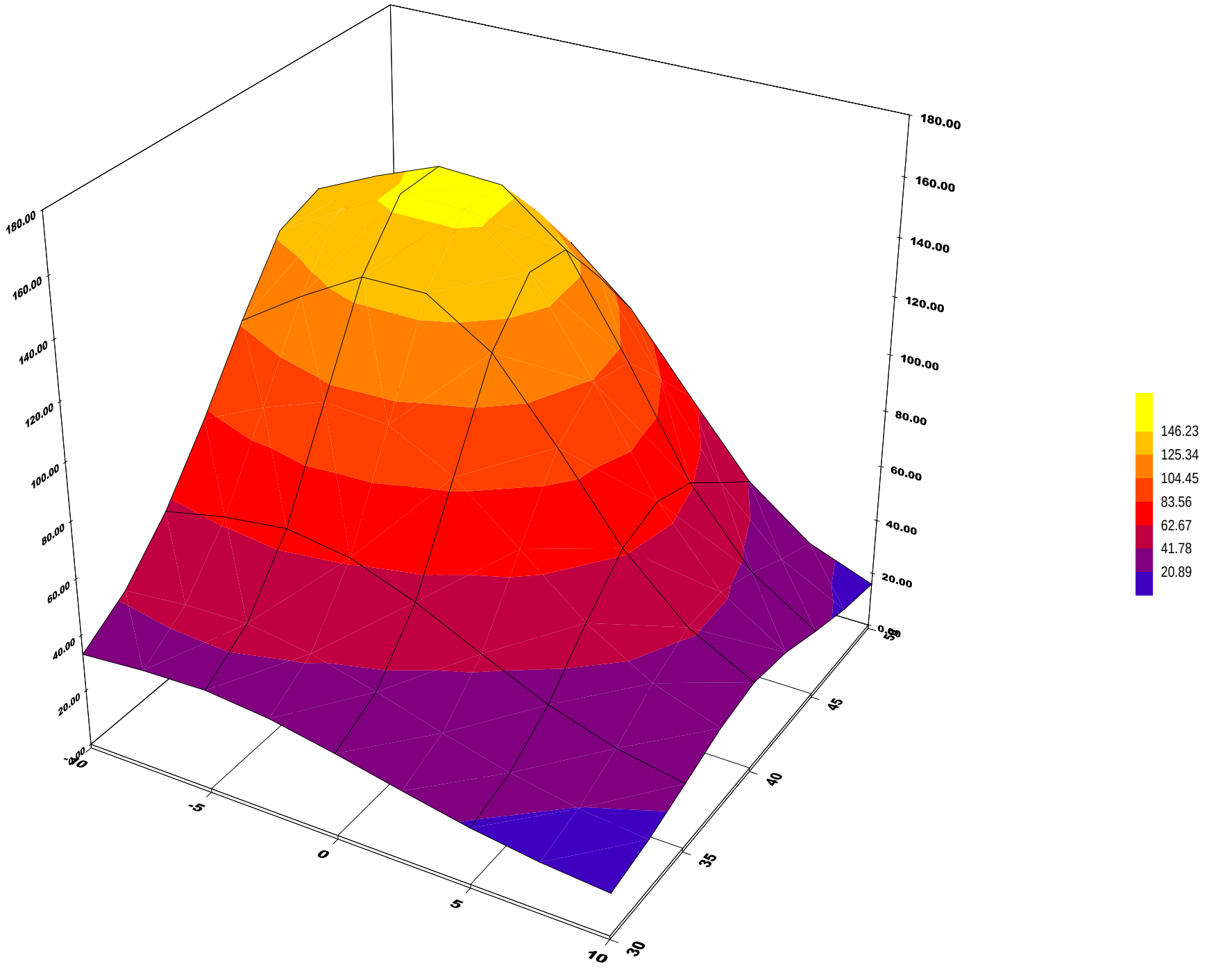
X = -5 Y = 45

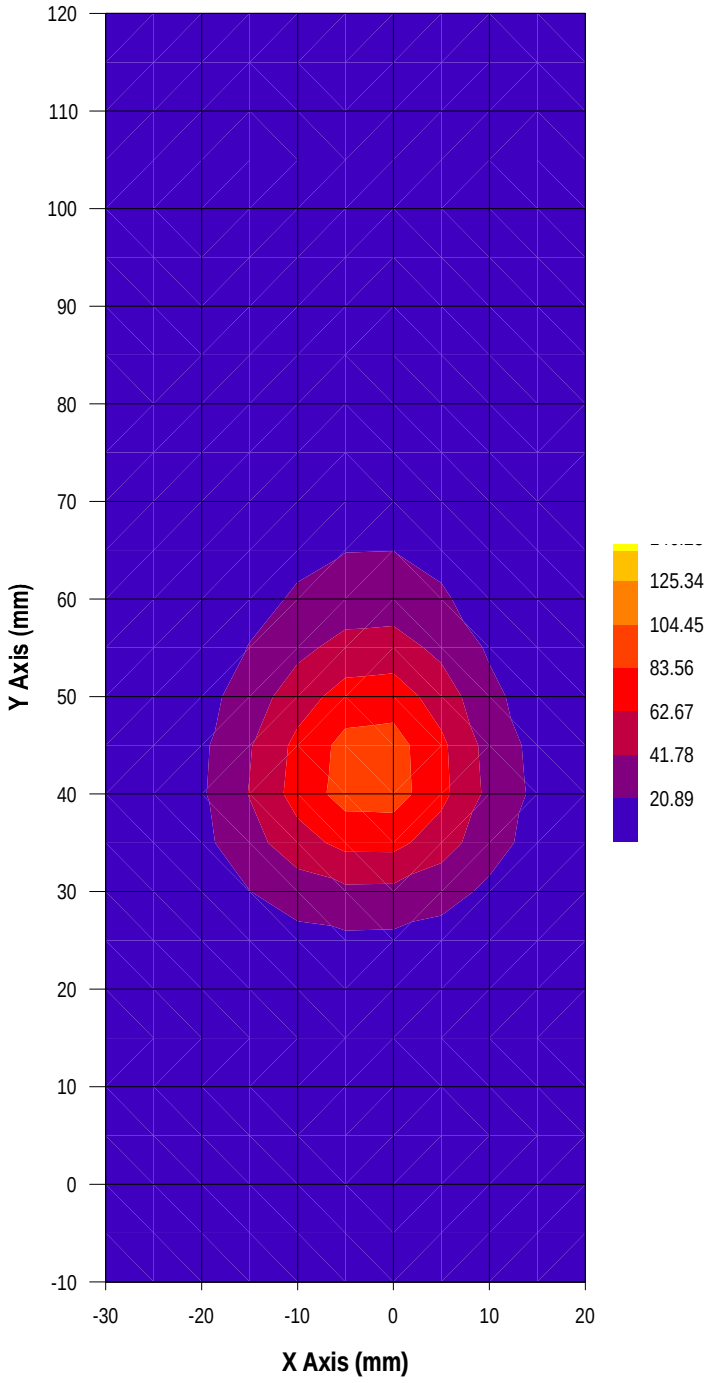
Measured Values (mV) :

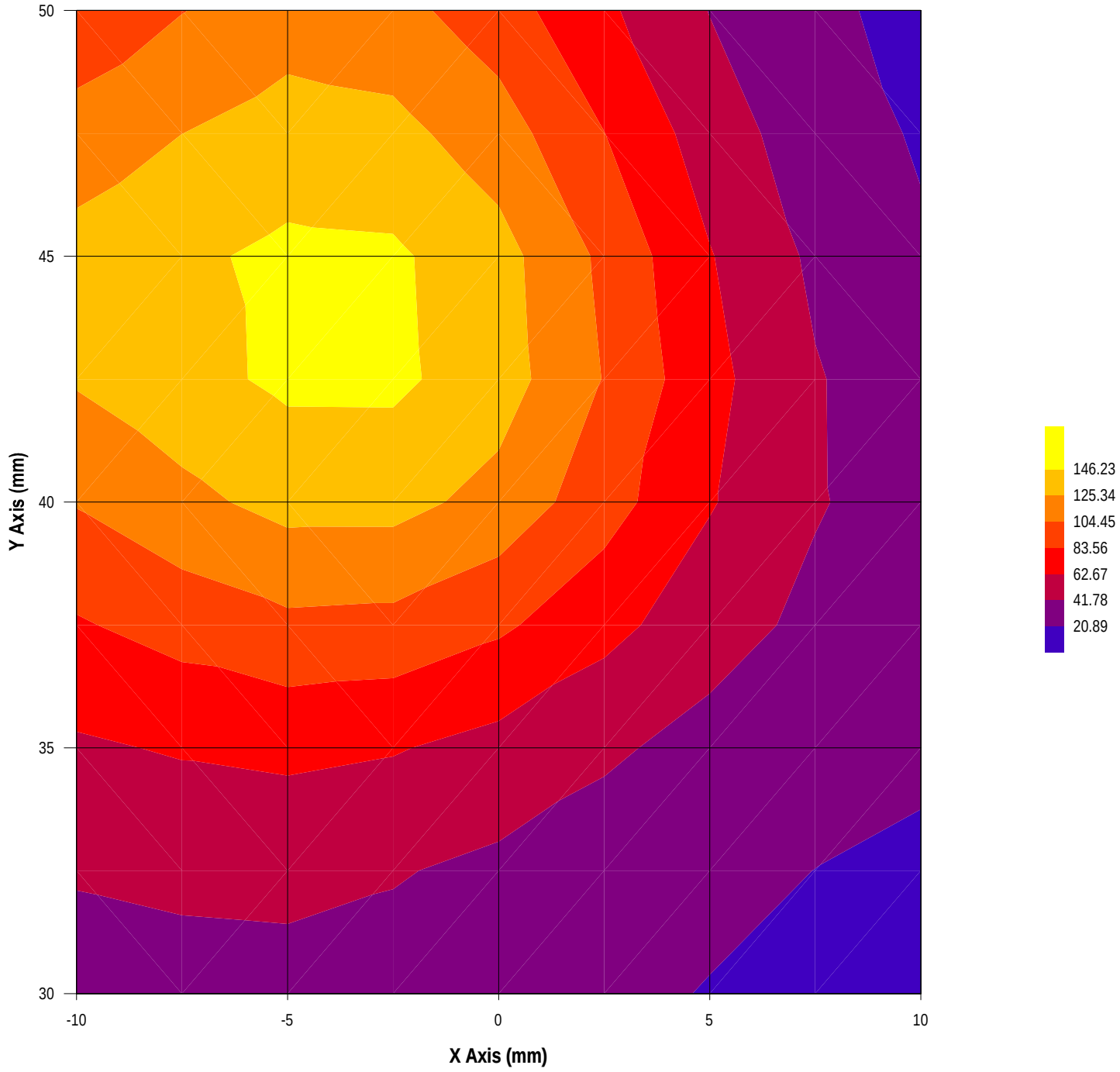
168.453	137.517	90.179	68.751	56.543	47.957
41.592	36.568	32.643	29.242	26.408	

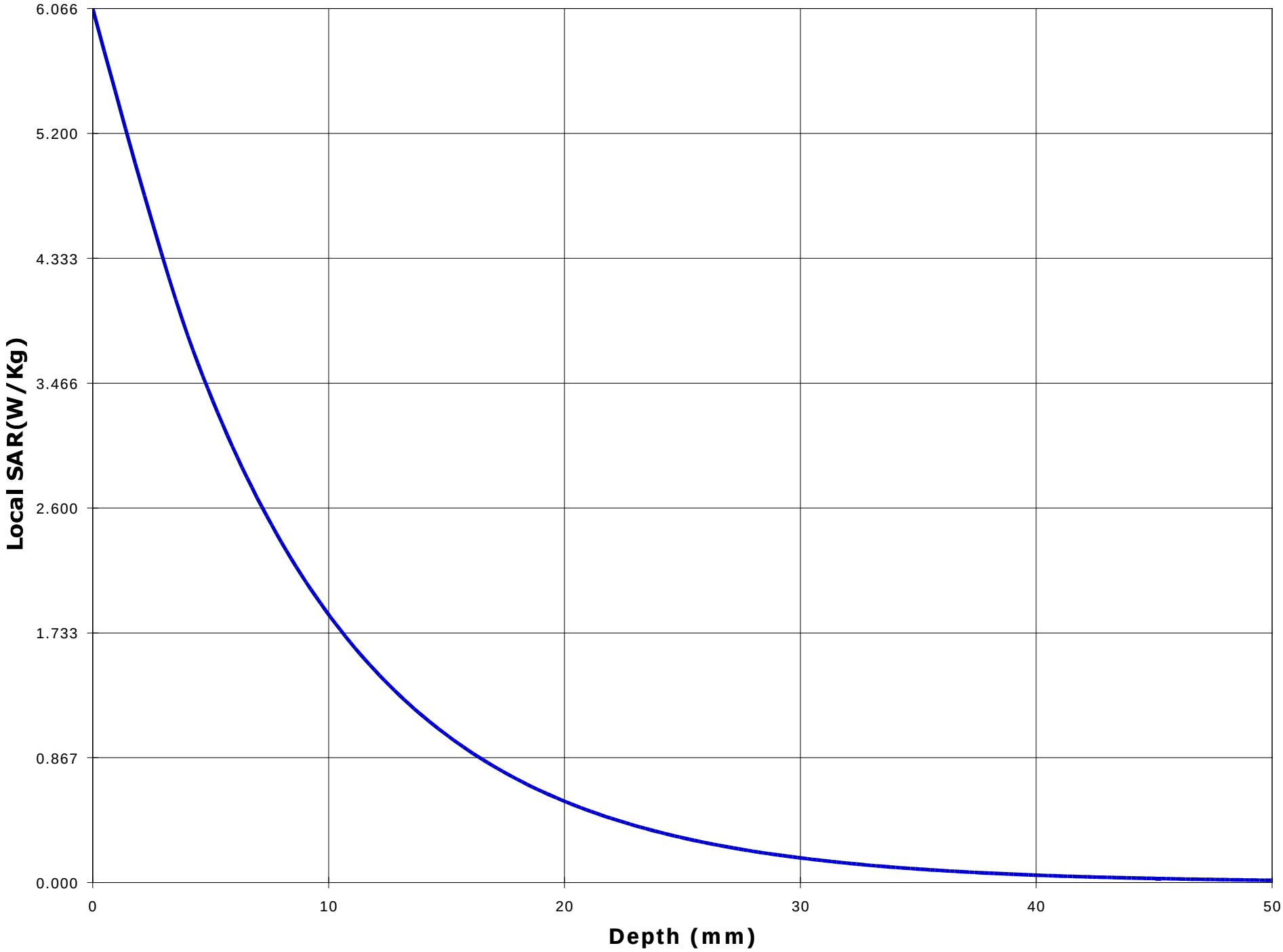
Peak Voltage (mV) : 158.172 **1 Cm Voltage (mV)** : 47.994 **SAR (W/Kg)** : 4.501

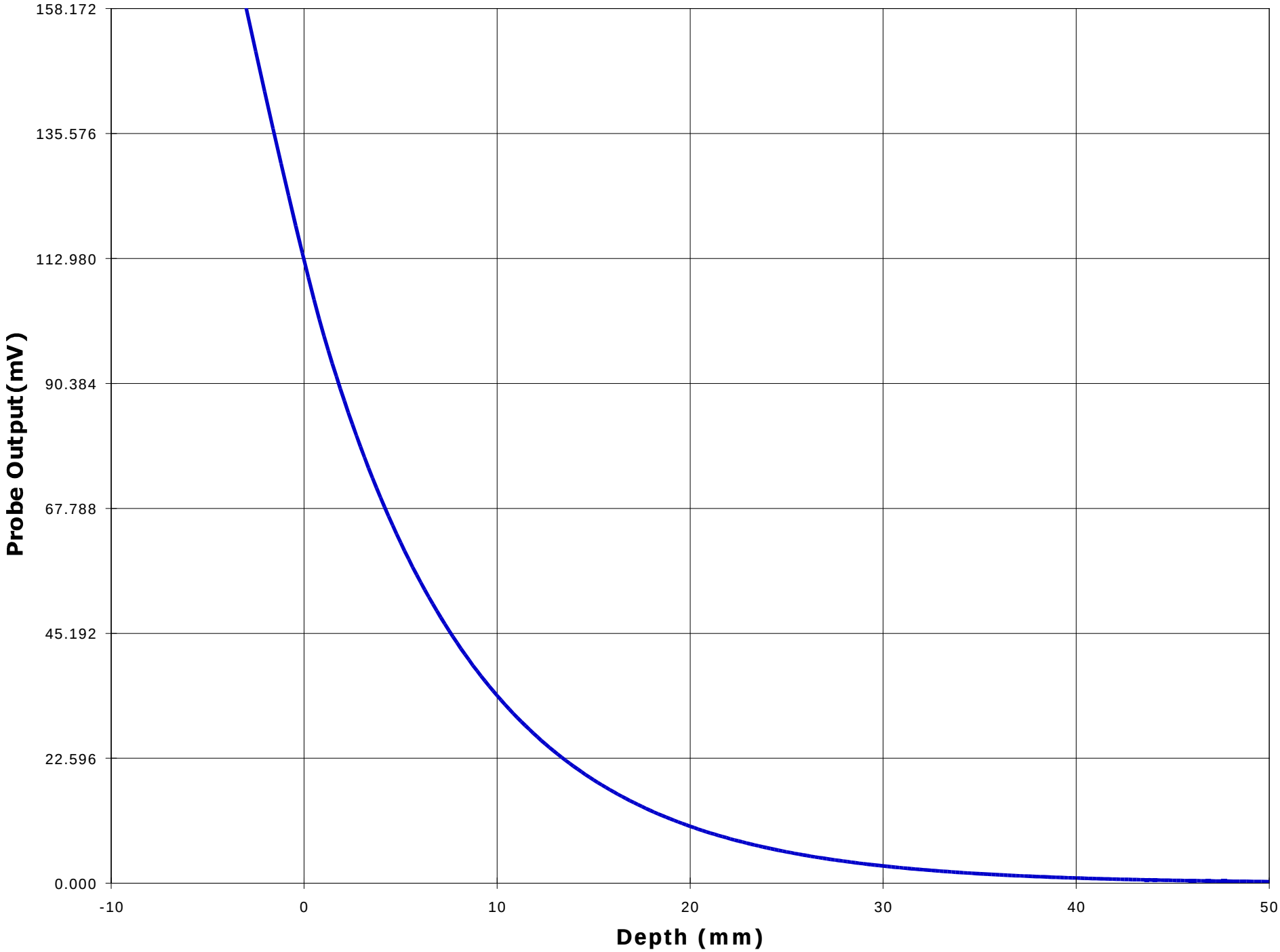

140.00
120.00
100.00
80.00
60.00
40.00
20.00
-30
-20
-10
0
10
20
-10
0
10
20
30
40
50
60
70
80
90
100
110
125.34
104.45
83.56
62.67
41.78
20.89


180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
-5
0
5
10
30
35
40
45
50
146.23
125.34
104.45
83.56
62.67
41.78
20.89


120
110
100
90
80
70
60
50
40
30
20
10
0
-10
Y Axis (mm)
-30
-20
-10
0
10
20
X Axis (mm)
125.34
104.45
83.56
62.67
41.78
20.89


50
45
40
35
30
Y Axis (mm)
-10
-5
0
5
10
X Axis (mm)
146.23
125.34
104.45
83.56
62.67
41.78
20.89


6.066
5.200
4.333
3.466
2.600
1.733
0.867
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


158.172
135.576
112.980
90.384
67.788
45.192
22.596
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

Test Information

Date : 11/20/00
Time : 5:42:22 PM

Product	: VHF Transceiver	**Test**	: SAR
Manufacturer	: ICOM Incorporated	**Frequency (MHz)**	: 173.95 N
Model Number	: IC-F30GT	**Nominal Output Power (W)**	: 5.0
Serial Number	: 0015	**Antenna Type**	: Monopole
FCC ID Number	: AFJ IC-F30G	**Signal**	: CW

Phantom	: Head - Front	**Dielectric Constant**	: 62.8
Simulated Tissue	: Brain	**Conductivity**	: 0.50

Probe	: E3	**Antenna Position**	: FIX
Probe Offset (mm)	: 3.000	**Measured Power (W)**	: 4.92
Sensor Factor (mV)	: 10.8	**(conducted)**	
Conversion Factor	: 0.414	**Cable Insertion Loss (dB)**	: 0.1
Calibrated Date	: 11/14/00	**Compensated Power (W)**	: 5.035

Amplifier Setting :

Channel 1 : 0.0061 Channel 2 : 0.0054 Channel 3 : 0.0044

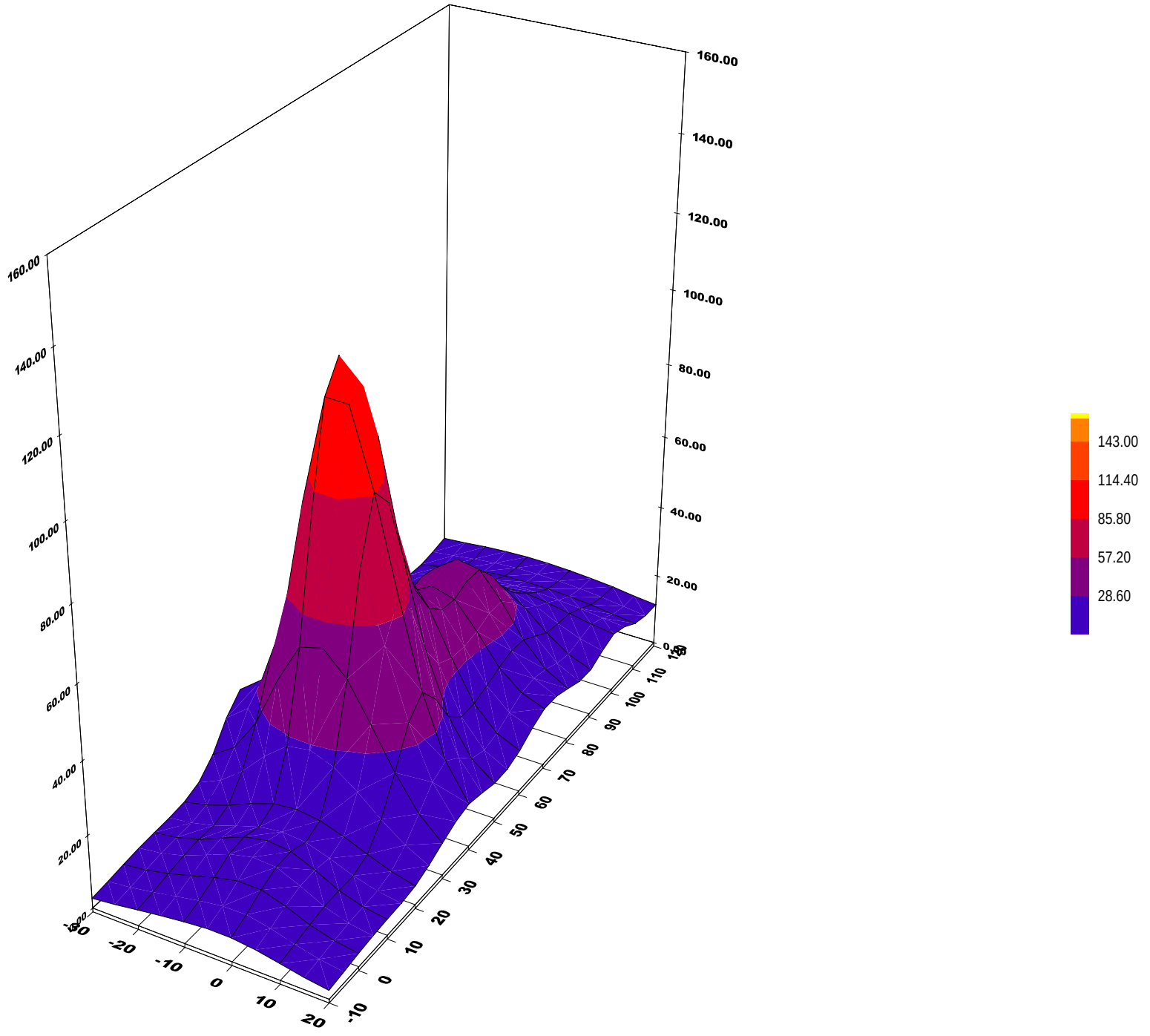
Location of Maximum Field :

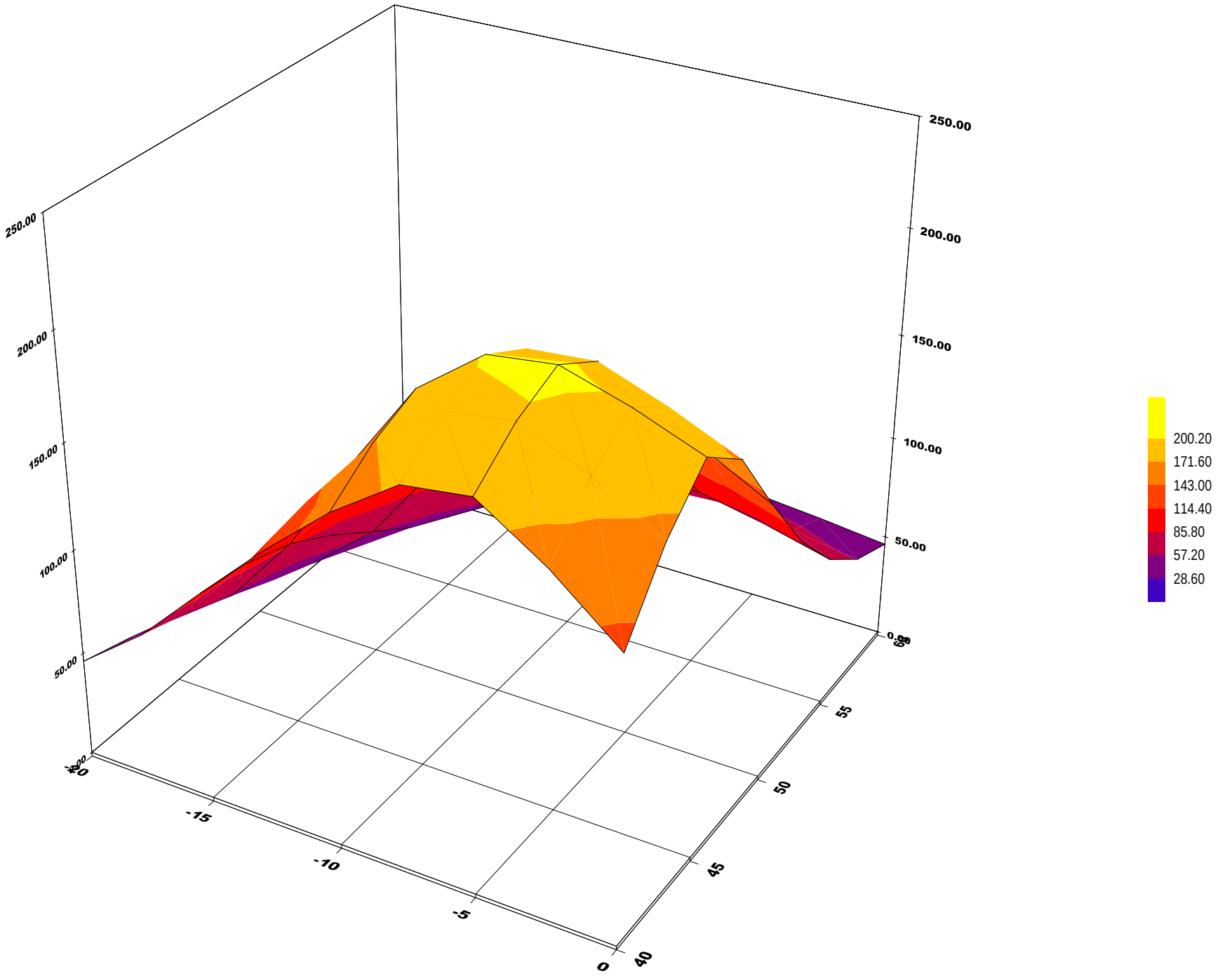
X = -5 Y = 45

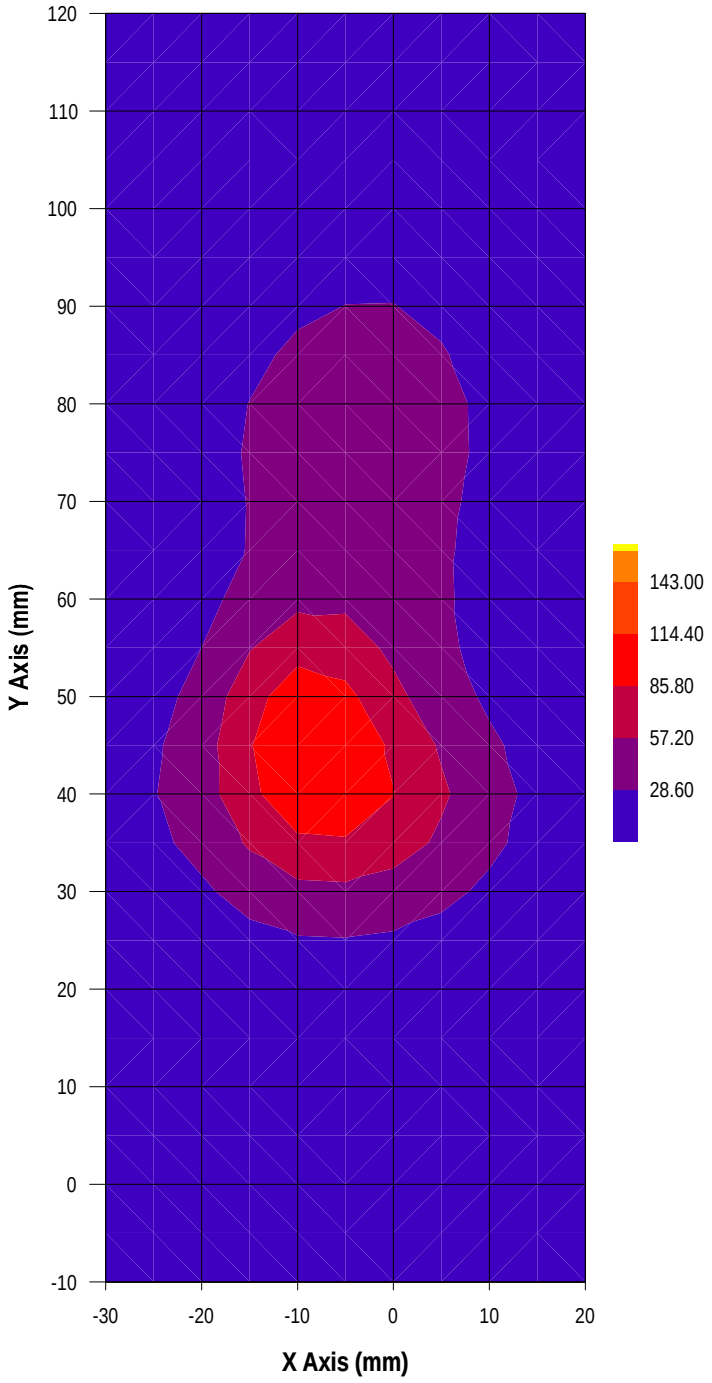
Measured Values (mV) :

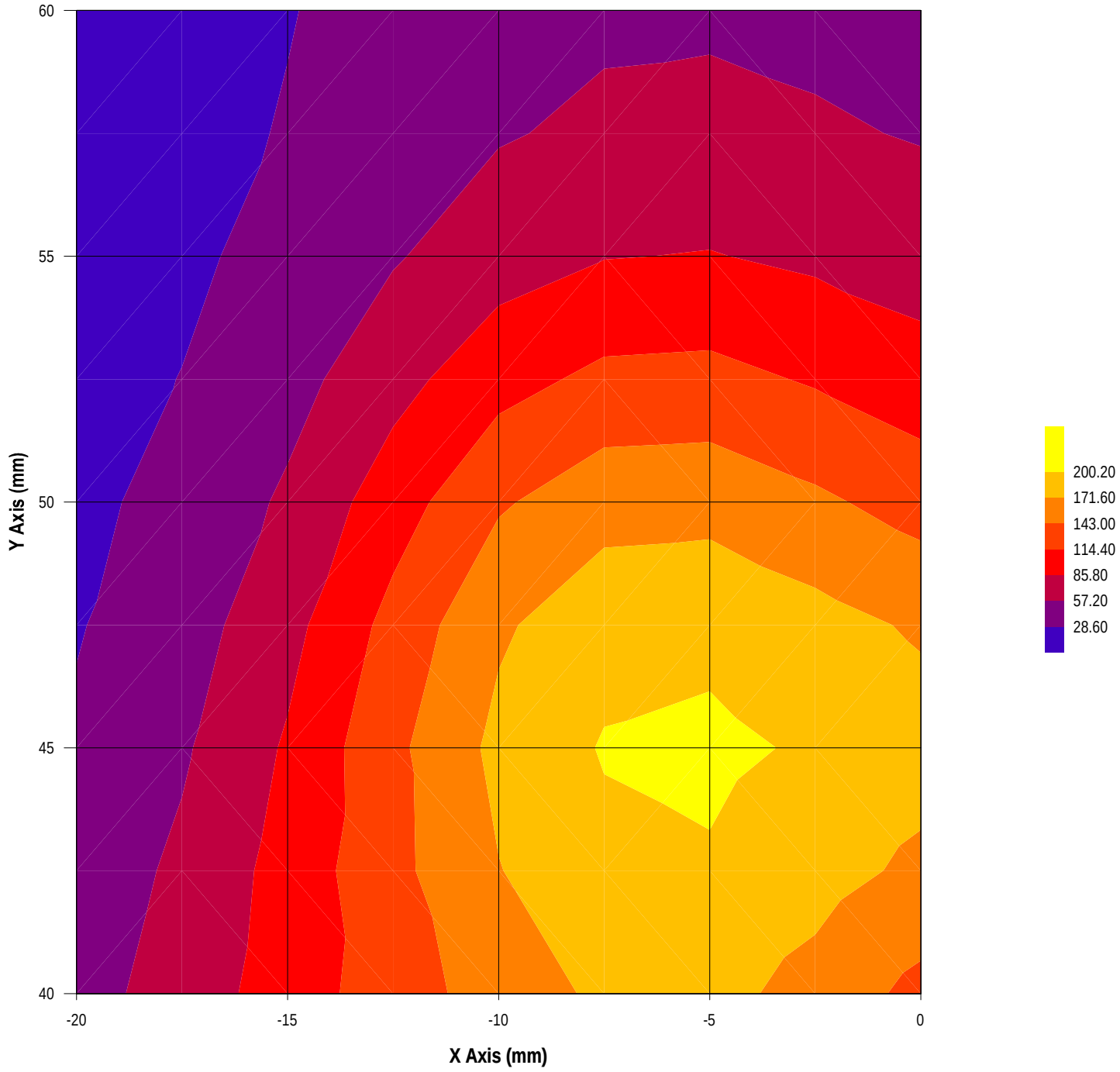
227.884	201.908	136.149	100.867	83.525	72.408
64.050	57.316	51.635	46.778	42.306	

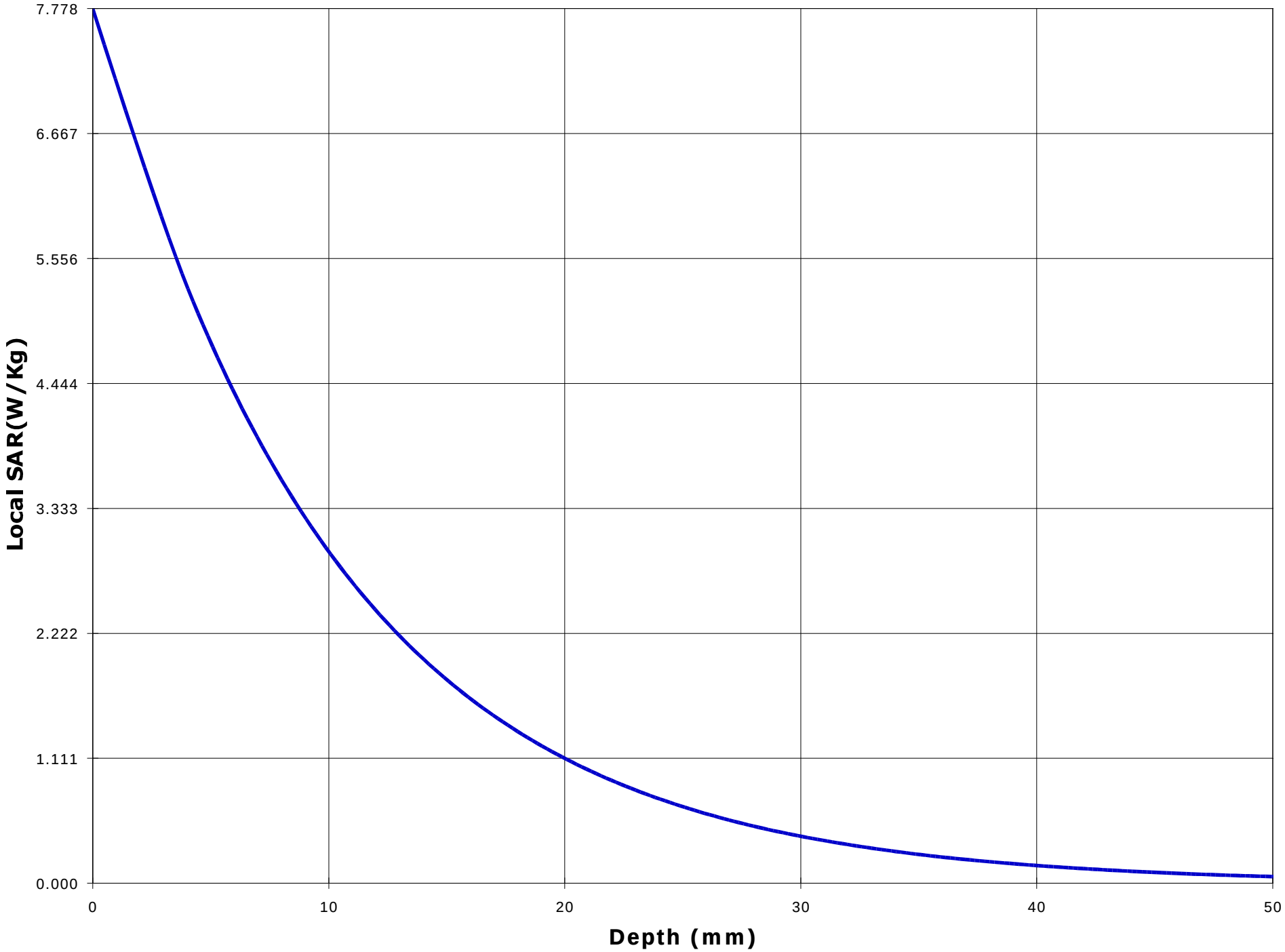
Peak Voltage (mV) : 202.802 **1 Cm Voltage (mV)** : 76.343 **SAR (W/Kg)** : 6.276

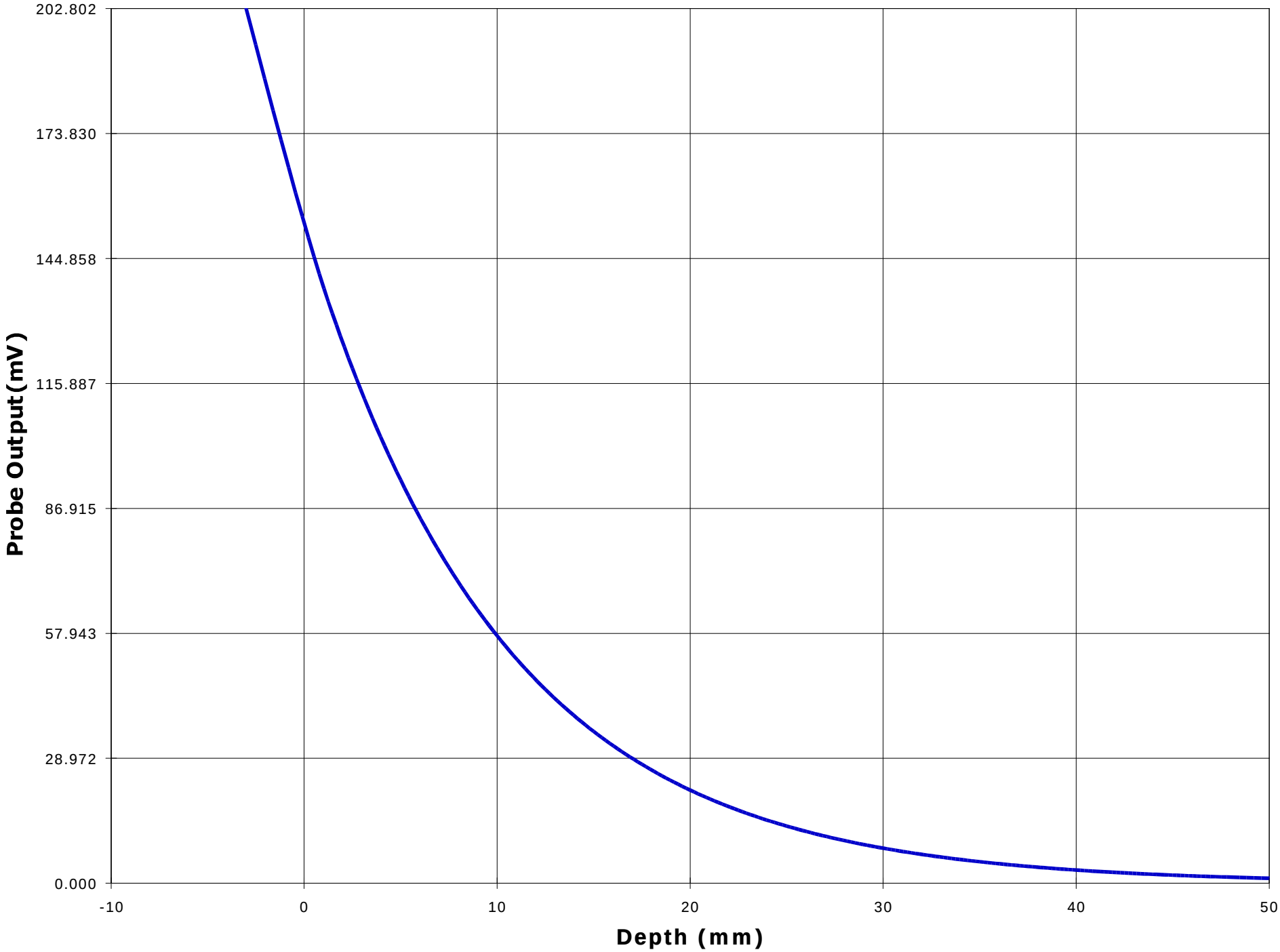

160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
-30
-20
-10
0
10
20
-10
0
10
20
30
40
50
60
70
80
90
100
110
143.00
114.40
85.80
57.20
28.60


250.00
200.00
150.00
100.00
50.00
250.00
200.00
150.00
100.00
50.00
-20
-15
-10
-5
0
40
45
50
55
200.20
171.60
143.00
114.40
85.80
57.20
28.60


120
110
100
90
80
70
60
50
40
30
20
10
0
-10
Y Axis (mm)
-30
-20
-10
0
10
20
X Axis (mm)
143.00
114.40
85.80
57.20
28.60


60
55
50
45
40
Y Axis (mm)
-20
-15
-10
-5
0
X Axis (mm)
200.20
171.60
143.00
114.40
85.80
57.20
28.60


7.778
6.667
5.556
4.444
3.333
2.222
1.111
0.000
Local SAR(W/Kg)
0
10
20
30
40
50
Depth (mm)


202.802
173.830
144.858
115.887
86.915
57.943
28.972
0.000
Probe Output(mV)
-10
0
10
20
30
40
50
Depth (mm)

ANNEX E: 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: Jay **Date:** 11/7/00

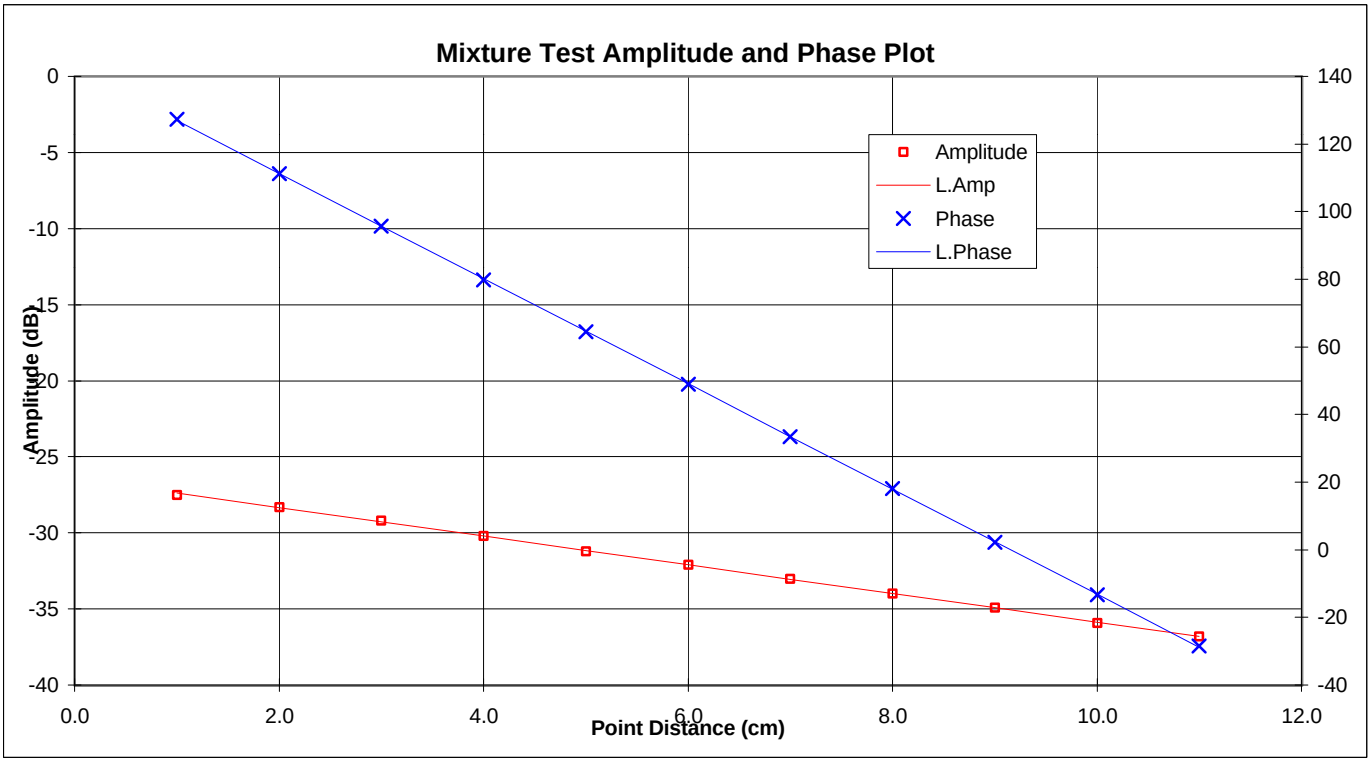
Frequency: 150 MHz **Mixture:** Brain **Room Temp.:** 25 °C

# of Points: 11 **Point Dist:** 1 cm

Point	Amplitude	Phase
1	-27.50	127.30
2	-28.30	111.30
3	-29.20	95.70
4	-30.20	79.90
5	-31.20	64.40
6	-32.10	48.90
7	-33.00	33.50
8	-34.00	18.20
9	-34.90	2.20
10	-35.90	-13.40
11	-36.80	-28.40

Composition	weight	% in weight
Tap Water	35,869.8 g	49.23 %
DI Water	0.0 g	0.00 %
Sugar	35,804.0 g	49.14 %
Alcohol	0.0 g	0.00 %
Salt	1,053.0 g	1.45 %
HEC	100.0 g	0.14 %
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:	62.8	60.2	57.178444	63.197228	4.37
Conductivity:	0.50	0.48	0.4553835	0.5033186	3.57



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:** 11/16/2000

Frequency: 150 MHz **Mixture:** Muscle **Room Temp.:** 25 °C

# of Points: 11 **Point Dist:** 1 cm

Point	Amplitude	Phase
1	-30.50	77.30
2	-31.80	60.50
3	-33.20	43.80
4	-34.50	26.70
5	-35.90	10.00
6	-37.30	-7.70
7	-38.60	-24.00
8	-40.00	-41.00
9	-41.20	-57.50
10	-42.60	-74.80
11	-44.20	-91.00

Composition	weight	% in weight
Tap Water	34,330.0 g	49.82 %
DI Water	0.0 g	0.00 %
Sugar	32,670.0 g	47.41 %
Alcohol	0.0 g	0.00 %
Salt	1,520.0 g	2.21 %
HEC	350.0 g	0.51 %
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:	63.0	62.7	59.54329	65.811004	0.53
Conductivity:	0.78	0.75	0.7116944	0.7866096	3.80