Probe E-010

SN: PCT003

Manufactured: November 4, 2002
Calibrated: January 3, 2003

Calibrated for the IDX System

PCTEST Calibration Laboratory

Approved By:

Alfred Cirwithian
Vice President Engineering

Calibration is performed according to IEEE Std. P1528-200X, Sec. 7 Draft 6.5 (2001)
and all test equipment used are traceable to U.S. NIST.

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6660-B Dobbin Road
Columbia, Maryland 21045 USA

Calibration Summary

Model: E-010
S/N: PCT003

OFFSET (cm)	ANGLE (deg)
0.24	54.73

Tissue Type	Frequency (MHz)	Dielectric Constant e_r	Conductivity (S/m) s	Conversion Factor g_x, g_y, g_z
Brain	835	40.00	0.91	7.20
Brain	1880	40.20	1.41	4.05
Brain	2440	39.34	1.77	8.80
Brain	5300	37.10	4.84	3.20
Brain	5800	36.00	5.28	2.30
Muscle	835	55.70	0.98	7.70
Muscle	1900	53.90	1.48	4.40
Muscle	2440	52.30	1.99	9.90
Muscle	5300	48.80	5.43	3.45
Muscle	5800	48.50	6.05	2.50

Frequency (MHz)	Isotropy	
	%	dB
835	3.49	0.15
1880	5.35	0.23
2440	4.02	0.17
5300	4.85	0.21
5800	4.93	0.21

Boundary Effect < 2%, 2.6 mm from probe tip to phantom

Diode Compression Point: 76 mV

Environmental Conditons:

Temperature: 23.34 °C
Relative Humidity: 34%
Barometer: 100.1 kPa

This probe was calibrated under the IEEE Std 1309-1966, *IEEE Standard for Calibration of Electromagnetic Field Sensors and Probes, Exluding Antennas, from 9 kHz to 40 GHz*.

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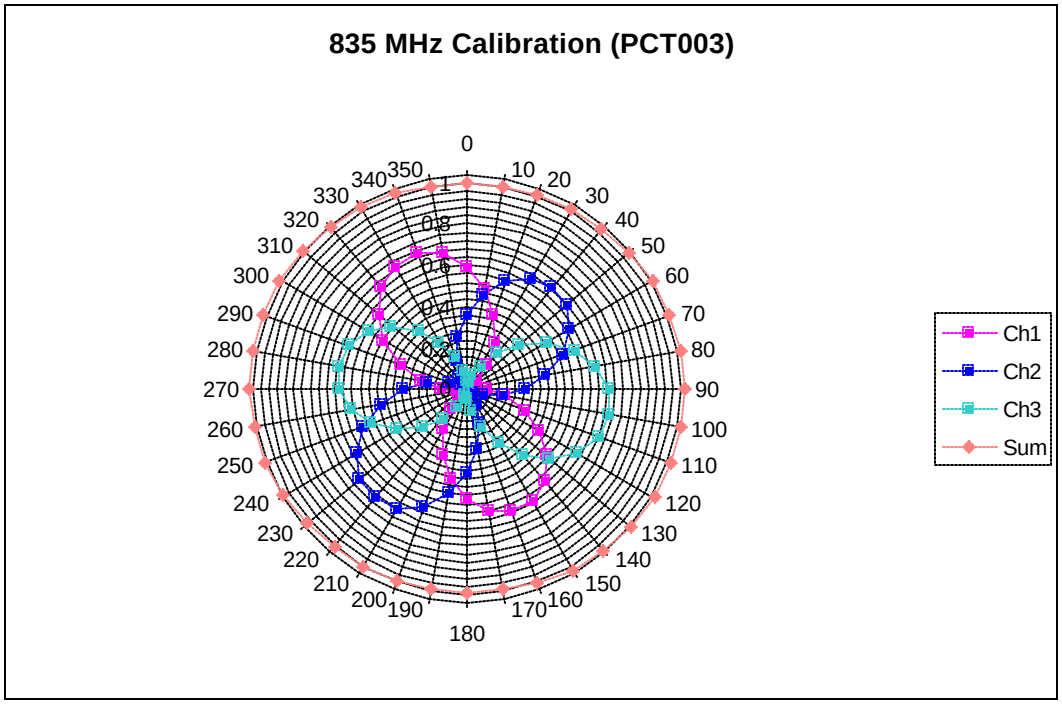

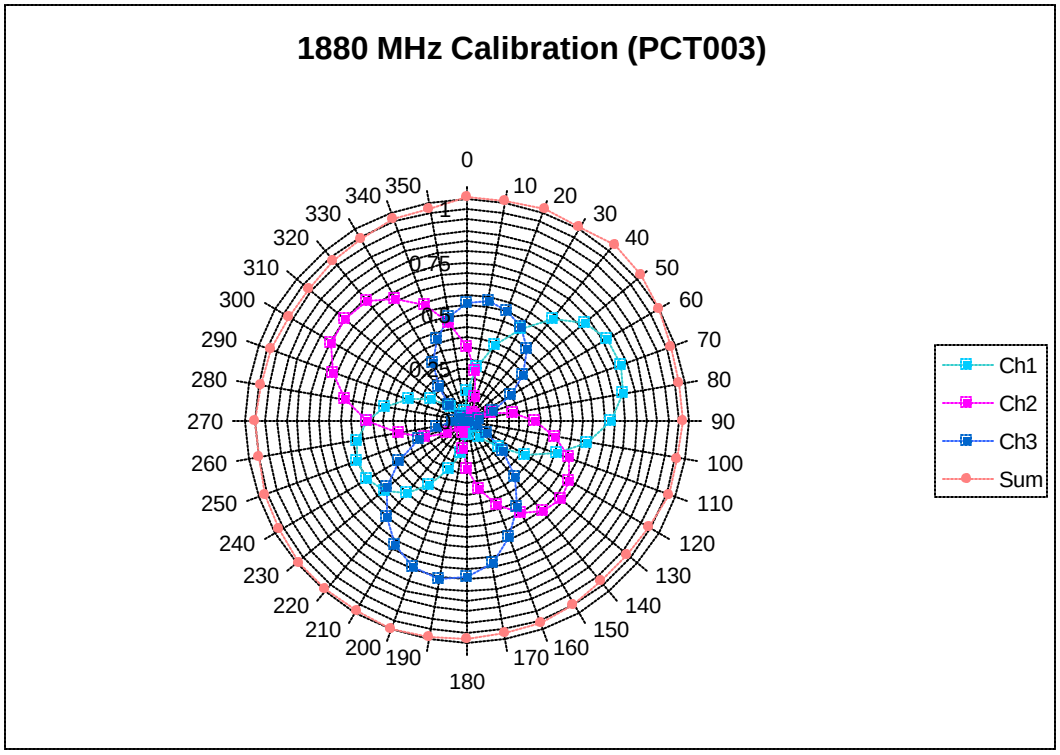

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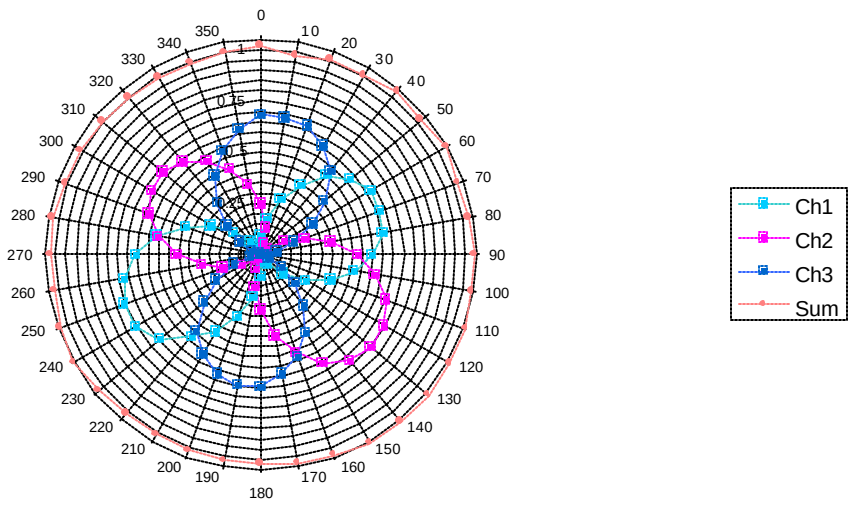
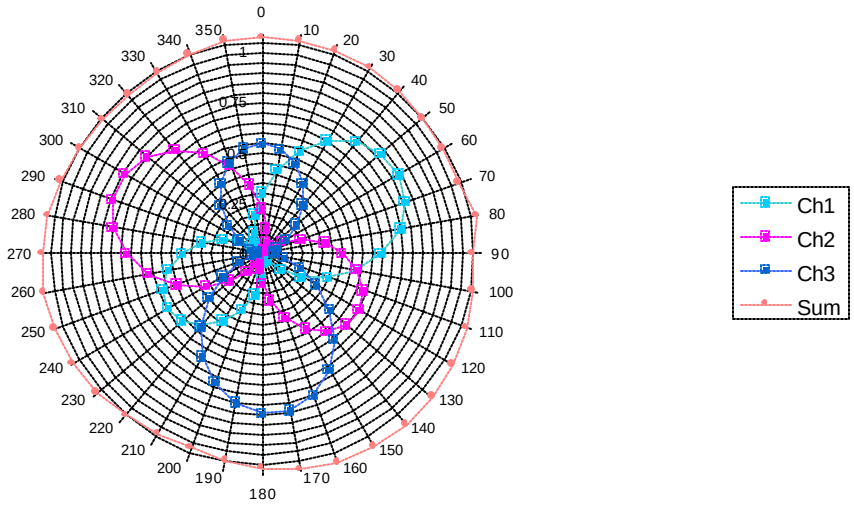
2440 MHz Calibration (PCT003)



5300 MHz Calibration (PCT003)



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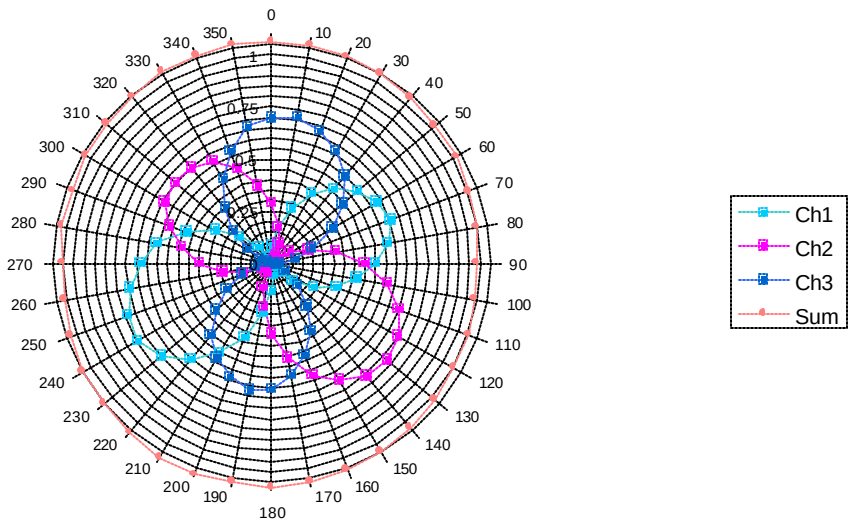
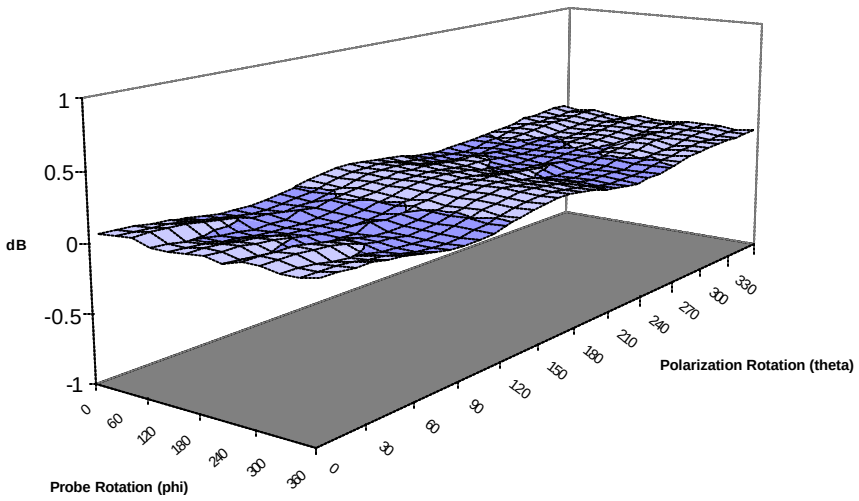
5800 MHz Calibration (PCT003)



Verification of Isotropy for PCT003



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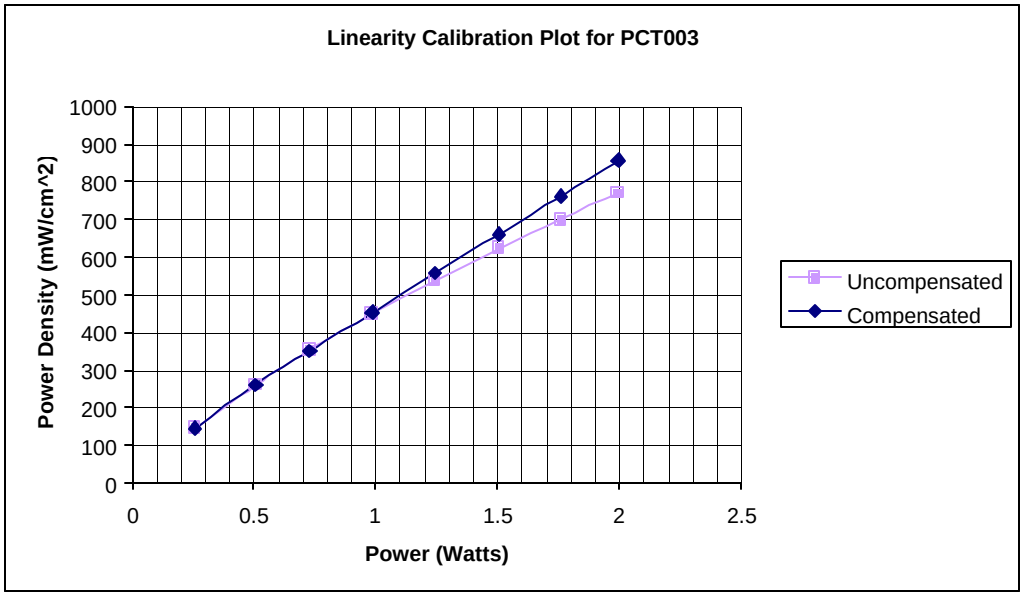

Probe Physical Characteristics

Serial Number:	PCT003
Sensor Offset:	2.4 mm
Sensor Length:	2.5 mm
Tip Enclosure:	Glass
Tip Diameter:	7 mm
Tip Length:	40 mm
Total Length:	290 mm

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Test Equipment

The test equipment used during the probe calibration are listed as follows:

EQUIPMENT SPECIFICATIONS		
Type	Calibration Date	Asset Number/ Serial Number
CRS Robot F3	February 2002	RAF0134133
CRS C500C Motion Controller	February 2002	RCB0003303
CRS Teach Pendant (Joystick)	February 2002	STP0132231
DELL Computer, Pentium 4 1.6 GHz, Windows 2000™	February 2002	4PJZ111
E-Field Probe E-010	January 2003	PCT003
Flat SAM Phantom (P-SAM-FLAT)	February 2002	94X-097
IDX Robot End Effector (EE-103-C)	February 2002	07111223
IDX Probe Amplifier	February 2002	07111113
Validation Dipole D-835S	October 2002	PCT441
Validation Dipole D-1900S	October 2002	PCT541
Validation Dipole D-2450S	October 2002	PCT641
Validation Dipole D-5000S	November 2002	PCT741
HP-778D Dual-Directional Coupler (0.1 ~ 2.0 GHz)	November 2002	PCT664
MicroCircuits Directional Coupler (4.0 ~ 8.0 GHz)	November 2002	PE2204-6
Amplifier Research 5S1G4 Power Amp	January 2003	PCT540
IFI T184-10 Power Amplifier (4.0 ~ 18.0 GHz)	December 2002	5957
Agilent E8241A (250kHz ~ 20GHz) Signal Generator	November 2002	US42110432
HP-8648D (9kHz ~ 4 GHz) Signal Generator	January 2003	PCT526
HP-8753E (30kHz ~ 6GHz) Network Analyzer	January 2003	PCT552
HP85070B Dielectric Probe Kit	January 2003	PCT501
IFI CC110EXX TEM Cell (DC to 2000 MHz)	January 2003	PCT498
EMCO 3115 Horn Antenna (2.0 ~ 18.0 GHz)	August 2002	PCT496
Guidline 5150 Precision Dual-Thermometer	November 2002	66145

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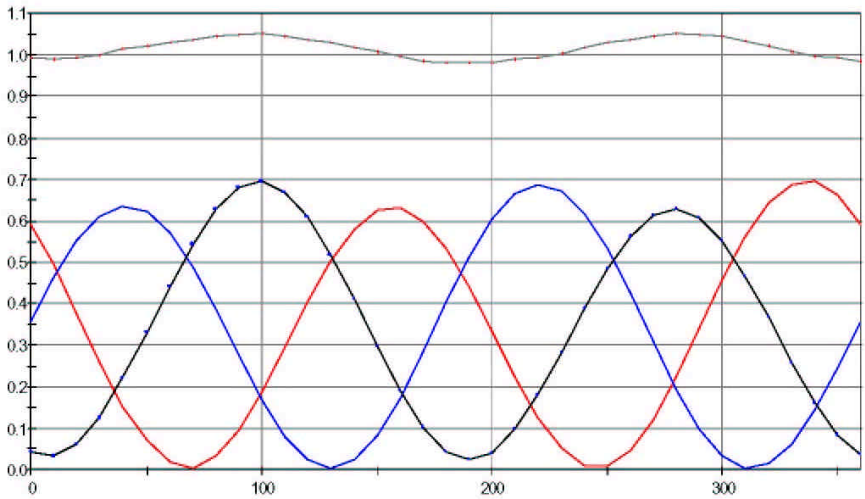
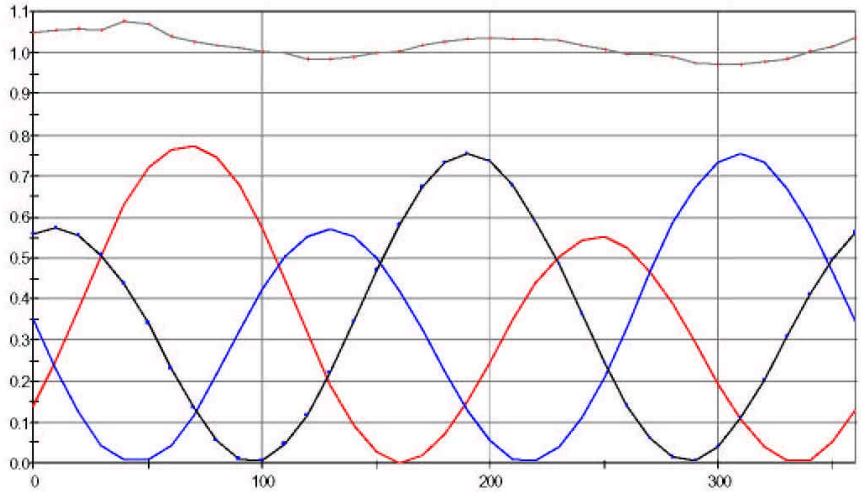
TEM Calibration Plot
Date: 3-Jan-03 05:19:17 pm
Probe Name: PCT003
Frequency: 835
Sensitivity: Ch1: 2.439 Ch2: 2.706 Ch3: 2.822 mV/(mW/cm^2)
Isotropicity: 3.49% 0.15 db Min=0.981 Max=1.051



TEM Calibration Plot
Date: 3-Jan-03 05:52:39 pm
Probe Name: PCT003
Frequency: 1880
Sensitivity: Ch1: 4.794 Ch2: 5.895 Ch3: 5.327 mV/(mW/cm^2)
Isotropicity: 5.35% 0.23 db Min=0.971 Max=1.078



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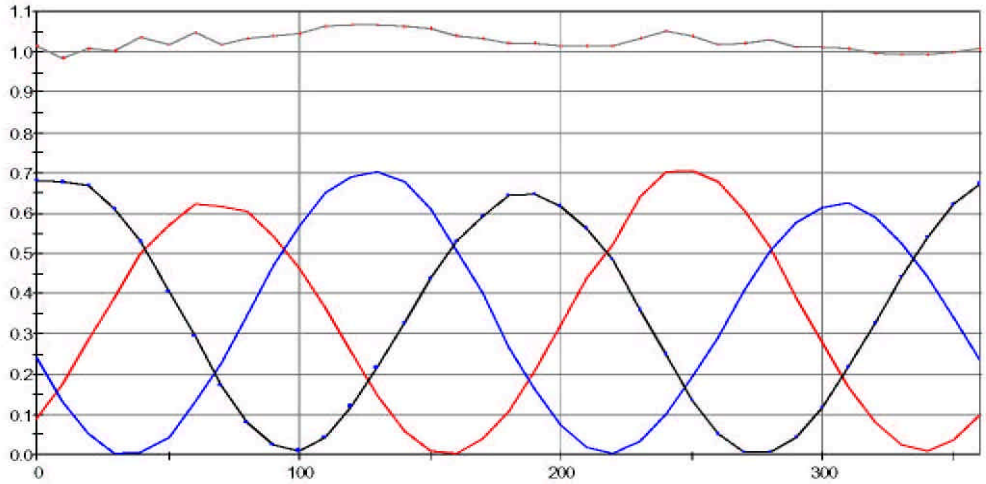
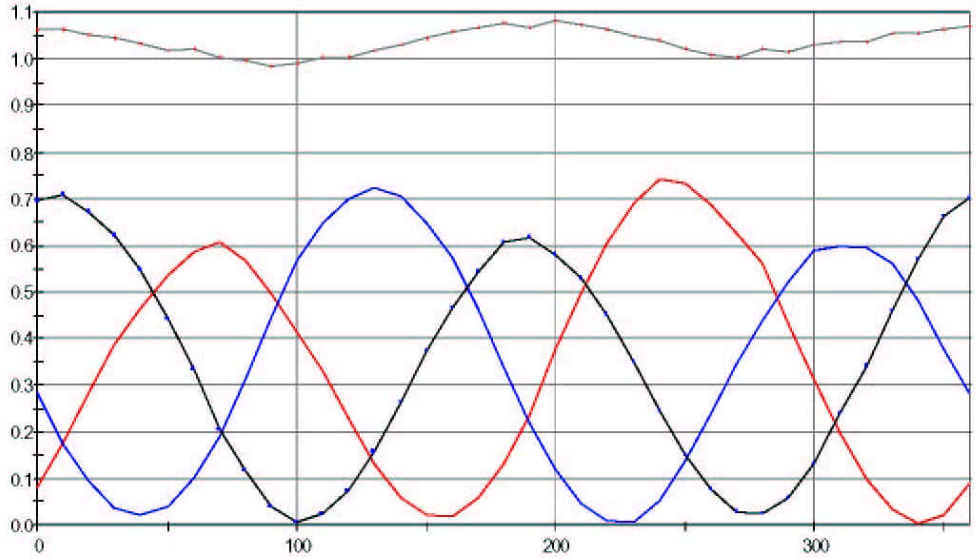
TEM Calibration Plot
Date: 3-Jan-03 10:10:11 am
Probe Name: PCT003
Frequency: 2440
Sensitivity: Ch1: 2.075 Ch2: 2.820 Ch3: 2.456 mV/(mW/cm^2)
Isotropicity: 4.02% 0.17 db Min=0.985 Max=1.066



TEM Calibration Plot
Date: 3-Jan-03 10:31:24 am
Probe Name: PCT003
Frequency: 5300
Sensitivity: Ch1: 1.939 Ch2: 2.177 Ch3: 2.062 mV/(mW/cm^2)
Isotropicity: 4.85% 0.21 db Min=0.984 Max=1.081



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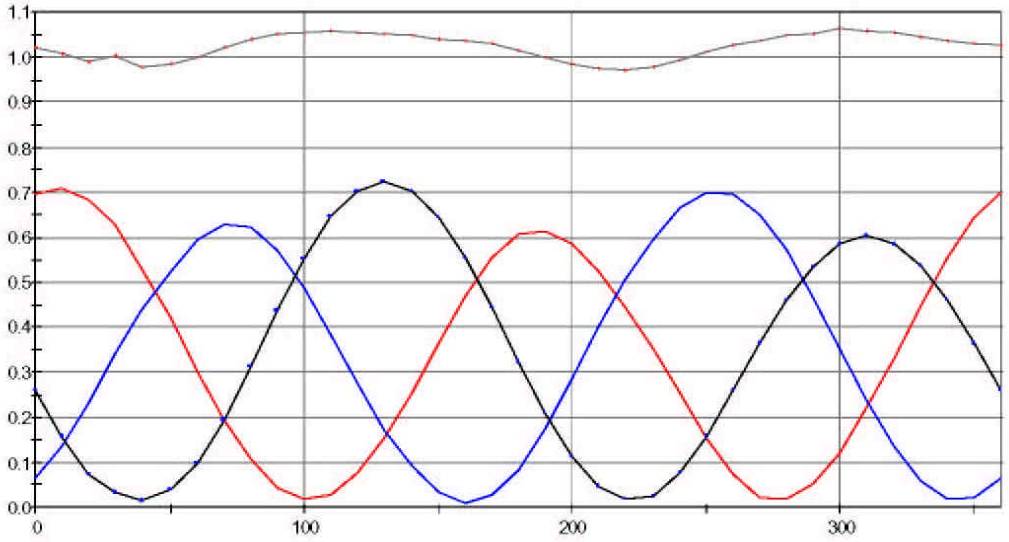
TEM Calibration Plot
Date: 3-Jan-02 12:06:18 pm
Probe Name: PCT003
Frequency: 5800
Sensitivity: Ch1: 0.6759 Ch2: 0.8082 Ch3: 0.7596 mV/(mW/cm^2)
Isotropicity: 4.93% 0.21 db Min=0.973 Max=1.082



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