National Institute of Standards and Technology

REPORT OF SPECIAL MEASUREMENT

OF

Cable Sample P/N P520-S3S1-25.6, S/N 0002TS

FOR

MegaPhase
201-D North 1st Street
Stroudsburg, PA 18360

ATTN: Dave Lutkins
Reference: PO# 009005

Calibration performed by James M. Puhl

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For the Director
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by

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Information on technical aspects of this report may be obtained from James Puhl, NIST, 100 Bureau Drive Stop 8460, Gaithersburg, MD 20899, 301-975-5581

Report format revised 4/00

MegaPhase supplied one cable for irradiation. The cable was irradiated under controlled conditions using gamma radiation. The irradiations were performed in the NIST B036 vertical beam, a calibrated ^{60}Co irradiator. During irradiation, the cable was held in a 15 cm diameter coil and flat on a polystyrene plate with a thickness of 6 mm. It was held centered at a scale distance of 105 cm while the beam collimator was set to 20 x 20. The dates of irradiation, value of dose rate, absorbed dose, and mean irradiation temperature were as follows:

Dosimeter Identification	Date of Irradiation	Dose Rate (Gy/min)	Irradiation Temp. °C	Absorbed Dose Gy(Si)
Cable	Sep 20, 2000	0.2025	23	150.0

UNCERTAINTIES AND RELATED FACTORS IN HIGH-DOSE CALIBRATIONS

High-Dose Calibrations in Standard Geometries using the NIST ^{60}Co B036 Vertical Beam

(Expanded uncertainty: ±2.2% at a 95% confidence level)

The high-dose calibrations at NIST involve the administration of ^{60}Co gamma radiation under environmentally controlled conditions. The dose values are based on standard water calorimeter measurements and EPR/Alanine dosimetry, which are corrected by certain modifying factors (such as the geometry attenuation factor and source decay factor).

The uncertainty cited above is pertinent to absorbed dose in silicon in calibrated geometries. A detailed list of the various sources of uncertainty and estimates of the magnitude of those uncertainties that make up the overall uncertainty given above may be obtained by requesting such information from NIST. The uncertainties are divided into two types: A and B. Type A uncertainties are those evaluated by statistical methods, often associated with random effects. Type B uncertainties are those evaluated by other means, often associated with systematic effects.

Type A Uncertainties

The combined standard uncertainty evaluated by statistical methods is ±0.38% at an approximate level of confidence of 68%.

Type B Uncertainties

The combined standard uncertainty based on scientific judgment is estimated to be ±1.02% at an approximate level of confidence of 68%.

Expanded Uncertainty

The type A and type B uncertainties have been combined in quadrature (the square root of the sum of the squares) and multiplied by a coverage factor of 2 to yield an expanded uncertainty of ±2.2% at an approximate level of confidence of 95%.