



MAGNET-PHYSIK

Dr. Steingroever GmbH

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Reg.-Nr. 004201 QM

Kalibrierlaboratorium für magnetische Messgrößen
Calibration laboratory for magnetic measurands

ENSC 509.A

Werks-Kalibrierschein Proprietary Calibration Certificate

Zertifikat-Nr.
Certificate No.

Z2703MPS08

Gegenstand Object	Reference Magnet
Hersteller Manufacturer	Magnet-Physik Dr. Steingroever GmbH
Typ Type	VM 4 – 5 mm
Fabrikat/Serien-Nr. Serial number	109055
Auftraggeber Customer	Ecole Normale Supérieure de Cachan F-94235 Cachan
Auftragsnummer Order No.	10005404
Anzahl der Seiten des Kalibrierscheines Number of pages of the certificate	2
Datum der Kalibrierung Date of calibration	14.04.2008

Dieser Kalibrierschein dokumentiert die Rückführung auf nationale Normale, Normalmesseinrichtungen und -verfahren zur Darstellung der Einheiten in Übereinstimmung mit dem Internationalen Einheitensystem (SI).

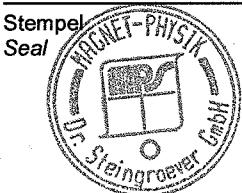
Für die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich.

This calibration certificate documents the traceability to national standards, standard measuring equipment and methods which realize the units of measurement according to the International System of Units (SI).

The user is obliged to have the object recalibrated at appropriate intervals.

Dieser Kalibrierschein darf nur vollständig und unverändert weiterverbreitet werden. Auszüge oder Änderungen bedürfen der Genehmigung des ausstellenden Kalibrierlaboratoriums. Kalibrierscheine ohne Unterschrift und Stempel haben keine Gültigkeit.

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Calibration certificates without signature and seal are not valid.*



Datum
Date

15.04.2008

Unterschrift
Signature

i. A. *Klaus Wagner*
Dr. Klaus Wagner

- Object of calibration

The Reference Magnet VM 4 - 5 mm is a precise magnet system for the generation of a magnetic flux density in an air gap.

- Method of calibration

The magnetic flux density in the air gap of the reference magnet and in the air gap of a reference magnet calibrated by nuclear magnetic resonance (NMR) were compared using a fluxmeter and a field measuring coil. The calibration of the fluxmeter and the field measuring coil do not enter the result of this calibration.

- Test equipment

Reference magnet VM 2

Test device No.: 1133

Next calibration: 06.08.2008

- Measuring conditions

Prior to the measurement the reference magnet was stored at room temperature for more than 24 hours.

- Environmental conditions

The room temperature during the measurement was (22.5 ± 1.0) °C.

- Result of measurement

The magnetic field strength in the center of the air gap is

$$H = (393.5 \pm 1.2) \text{ kA/m},$$

the magnetic flux density is

$$B = (494.5 \pm 1.5) \text{ mT}.$$

- Uncertainty of measurement

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.