

Traceability of coordinate measurements at Central Office of Measures

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Central Office of Measures (GUM) is the national metrology institute (NMI) and take the responsibility for maintaining the national measurement standards and establishing the traceability of measurements to the SI units in Poland. Laboratory of Length at GUM offers dimensional measurement services and calibration of transfer standards used to calibrate coordinate measuring machines (CMMs). The chain to the SI-unit of length (meter) is presented in the figure 1. GUM is not only concerned with traceability, but also with the development and realization of coordinate measurements at the highest level of accuracy and with the smallest possible uncertainty, using SIP CMM5 (figure 2). The international comparisons among the NMIs, in which GUM participates [1], assure that measurement results within their uncertainties agree worldwide, what is confirmed in BIPM key comparison database (KCDB) [2]. Length Laboratory of GUM has published 45 calibration and measurement capabilities (CMCs). Seven of these services use coordinate measuring technique: step gauges, ball/hole plate, 90° cylinder square, 90° steel/granite square, external cylinder (plug gauges), internal cylinder (ring gauges), cone (taper) gauge and spheres (balls). Another seven services apply to transfer standards (short and long gauge blocks, rings, balls) used to calibrate CMMs.

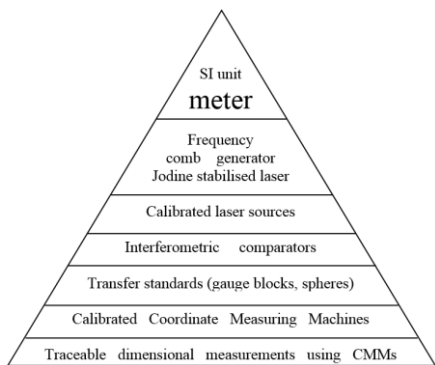


Fig. 1. Traceability chain of CMMs



Fig. 2. 3D SIP CMM5 machine at GUM

- [1] A. Kapińska-Kiszko, A. Wójtowicz: Assuring of measurement results credibility using coordinate technique through international comparisons. Proc. of CMT2014 Proc. XI International Conference Coordinate Measuring Technique, 2014, ISBN 978-83-63713-88-1
- [2] https://kcdb.bipm.org/appendixC/L/PL/L_PL.pdf