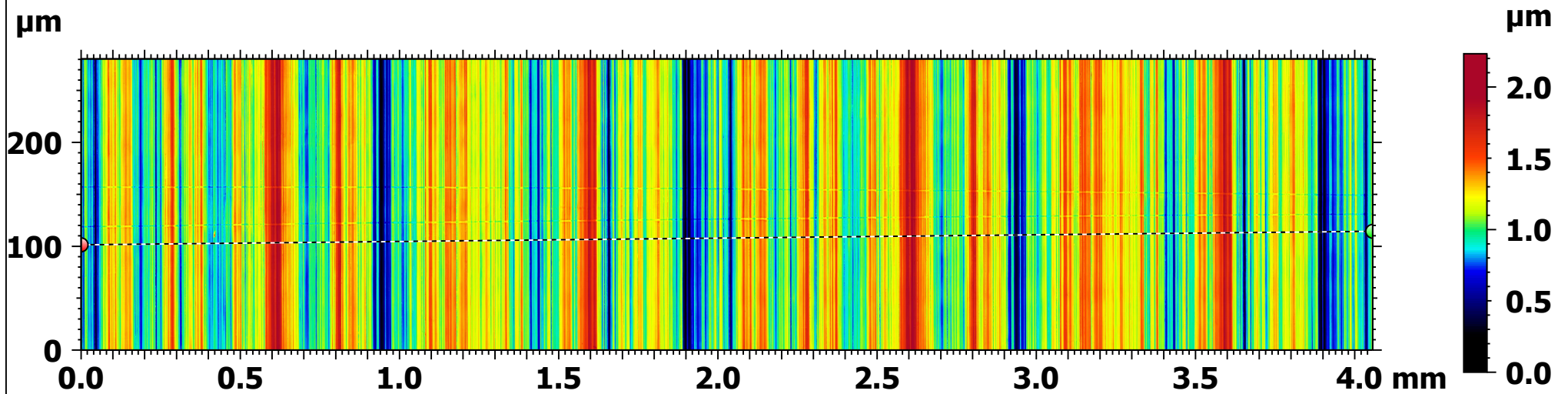
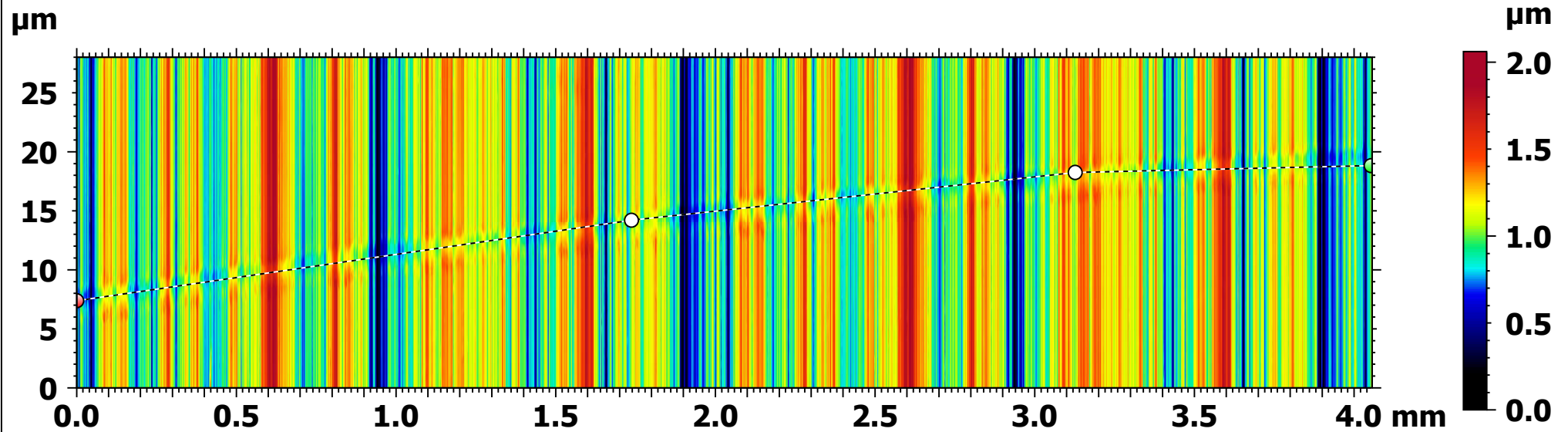


Parameters	Value	Unit
Length	75.82	μm

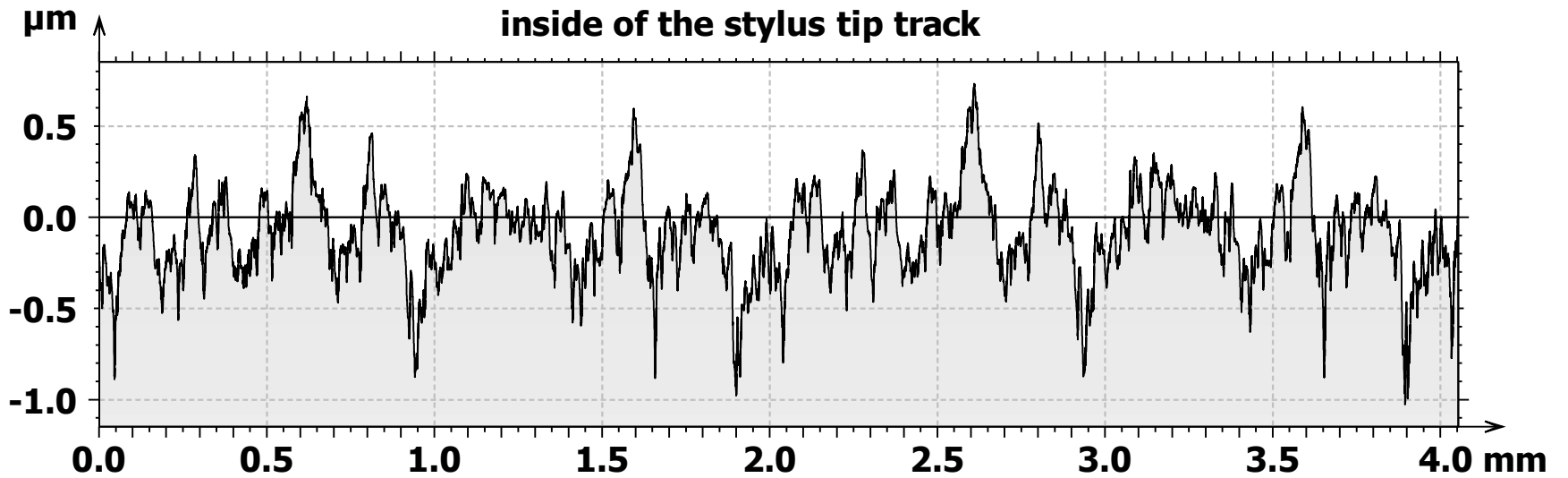


ISO 4287 - Roughn...

F: None
 S-filter (λ_s): Gaussian, 2.500...
 L-filter (λ_c): Gaussian, 0.8000...
 Calculated on: All λ_c (5)

Amplitude parameters

Rp	0.6435	μm
Rv	0.7505	μm
Rz	1.394	μm
Rt	1.496	μm
Ra	0.1780	μm
Rz1max	1.454	μm

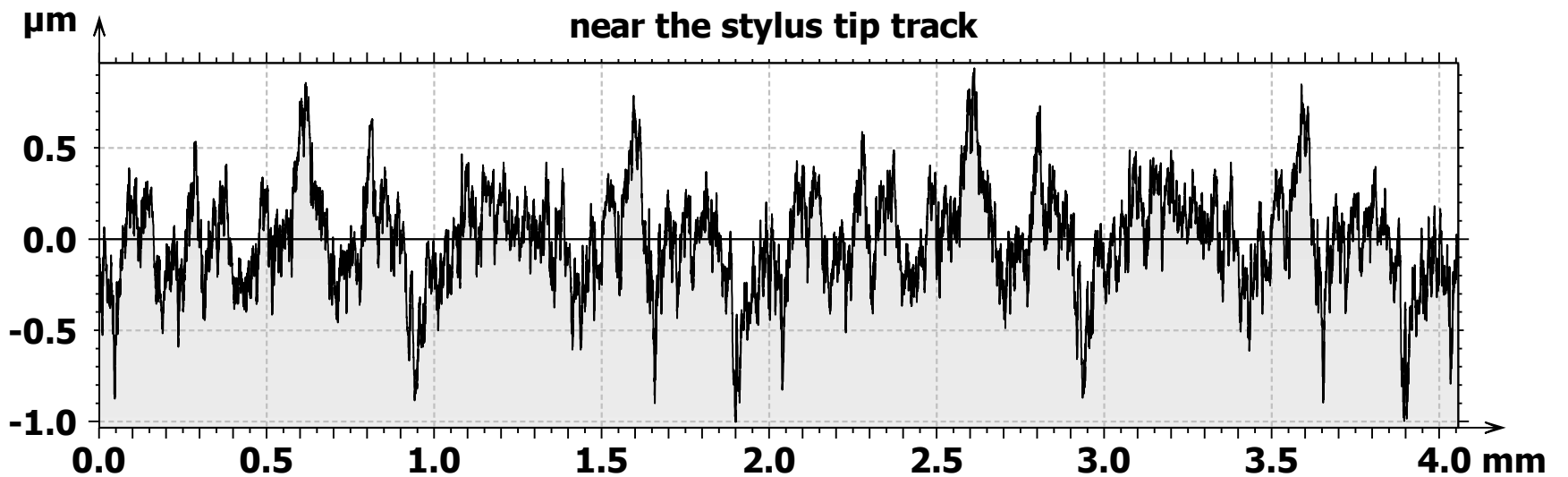


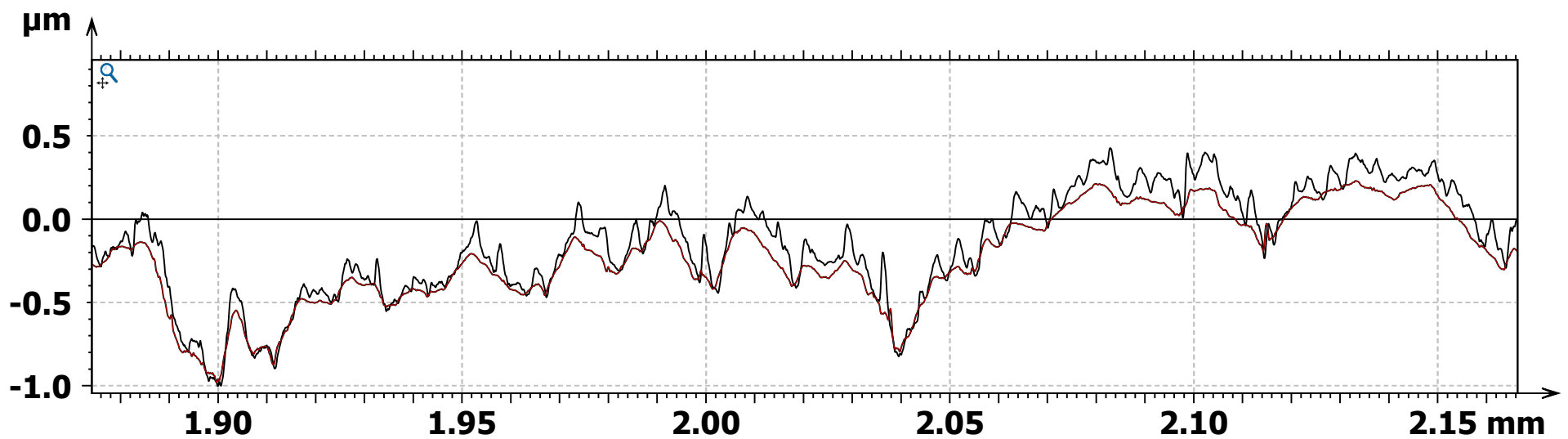
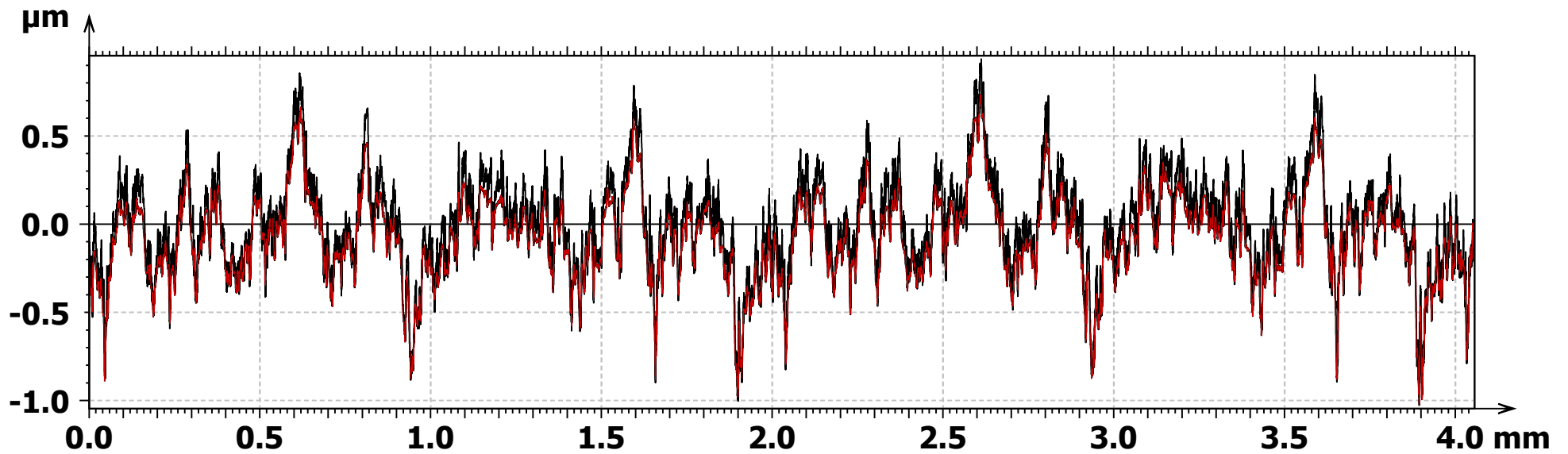
ISO 4287 - Roughn...

F: None
 S-filter (λ_s): Gaussian, 2.500...
 L-filter (λ_c): Gaussian, 0.8000...
 Calculated on: All λ_c (5)

Amplitude parameters

Rp	0.7434	μm
Rv	0.8311	μm
Rz	1.575	μm
Rt	1.670	μm
Ra	0.2010	μm
Rz1max	1.666	μm

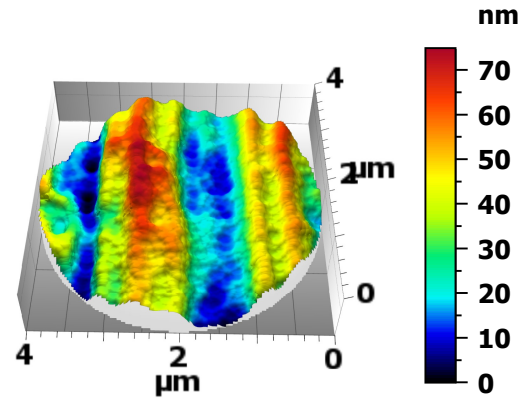






smartWLI nanoscan

- 220 single scans with 5MP
- point density xy 0.03 µm
- system noise z 0.03 nm



- app. 14.000 measuring points inside the area of the stylus tip with a diameter of 4 µm
- the complete area - 4000 x 300 µm² was scanned with 1.100 Mio. measuring points and 133.000 points per profile


Halle KNT 4058/01

- stylus instrument MahrSurf XR20
- tip radius < 2 µm
- static measuring force 1mN
- the standard was exclusive used for calibration of optical measuring systems
- app. 10.000 measuring points per profile

RAUNORMAL			Fabr.-Nr.: 7413		
Baureihe: KNT 4058/01 • Kl. A • Stufe 1					
Messergebnisse					
Auszüge aus den HALLE-Kalibrierscheinen					
	Max.	Gem.Mw.	Min.		HALLE GmbH Edmissen Germany Tel.: 05176-975978 Fax: 05176-975988 Vorgang Nr.: 9784
Ra	0,218	0,200	0,182		
Rz	1,62	1,49	1,36		
Rmax	1,78	1,63	1,48		
Gem.Mw. = Gemittelte Messwerte, in µm Max. bzw. Min. sind Messwerte in µm nach Zuschlag bzw. Abzug der jeweiligen Messunsicherheit					


Normal zum Kalibrieren und Prüfen von Messgeräten zur Bestimmung von Oberflächenrauheiten entsprechend PTB-Normalen

Standard for calibration and testing of Instruments for surface roughness measurement corresponding to PTB-standards



Beschädigungen der Messflächen können so vermieden werden:
Keine abgebrochenen Tastspitzen verwenden. Stoßartiges Aufsetzen der Tastspitze vermeiden. Kein ruckartiges Verschieben des Normalis unter der abgesetzten Tastspitze. Extrem hohe Auflagekräfte der Tastspitze vermeiden, wie es z.B. bei unsachgemäßem Ausrichten auftreten kann. Gleitflächen nötigenfalls nachpolieren.

Damages of the surfaces can be avoided in this way:
Do not use broken stylus tips. Avoid abrupt touch down of the stylus. Avoid jerky shifting of the standard below the touched down stylus. Avoid extremely high pressure of the stylus as for example at inexpertly alignment. Repolish the skid if necessary.



HALLE
 Präzisions-Kalibriernormale GmbH
 Made in Germany

Citation out from Halle:***"Damages of the surface can be avoided in this way:***

Do not use broken stylus tips. Avoid abrupt touch down of the stylus. Avoid jerky shifting of the standard below the touched down stylus. Avoid extremely high pressure of the stylus as for example at inexpertly alignment. Repolish the skid if necessary."

Since the standard was never used from GBS for stylus measurements we have to suspect, that the standard was damaged from the certification themself.

It seems problematic to check the stylus tip after each measurement and the ISO regulation is mentioning a tip radius $< 2 \mu\text{m}$ which could be also true for a damages tip.

The measured abrasion exceed 200 nm and has a significant impact to measured roughness values.

Many standards which are continuously used to calibrate stylus instruments are in much worse conditions and could cause wrong measuring results. Out of this reasons stylus tips and surface standards need a continuously curvey.