

Sensofar S Wide

光學式大範圍快速3D掃描儀

慶璇實業有限公司

應用 謝嘉原

Sensofar Company

THE COMPANY



- ❑ Sensofar was founded in 2001 in Terrassa (Barcelona, Spain). 100% private share.
- ❑ We design and manufacture optical instrumentation for the characterization of micro and nano scale surfaces.
- ❑ We provide solutions for Quality Control, Quality Inspection and R&D.
- ❑ Offices: US, China and Germany. Worldwide distribution and service (>20 countries).
- ❑ >900 systems installed worldwide: semiconductor, PCB, medical devices, optics, automotive, aerospace, dental implants, molding, tooling, and many other applications.

Sensofar總公司位於西班牙巴塞隆納，
分公司設立於三大工業國

THE COMPANY

Headquarters & Sales Offices



SENSOFAR.
METROLOGY



Sensofar METROLOGY

Barcelona (SPAIN)
1600 m² production
and R+D facilities



Sensofar ASIA

Shanghai (CH)
Taipei (TW)

Sensofar GERMANY

Munich (GE)

Sensofar USA

Newington (US)

五大系統

SYSTEMS
Portfolio

SENSOFAR.
METROLOGY



S wide



S neox



S neox
Five Axis



S lynx

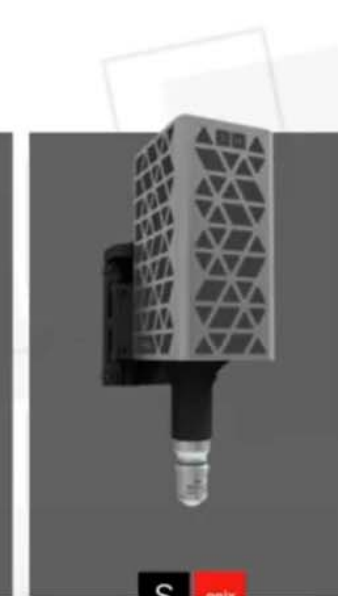


S onix

四種掃描頭

SENSORS
Portfolio

SENSOFAR.
METROLOGY



挑戰大尺寸樣品的3D表面輪廓

SENSOFAR CHALLENGES
Portfolio



新光學技術: 週期性條紋投影於物體表面， 利用條紋扭曲組合成3D輪廓



重點主題

KEY TOPICS

- ▣ New system makes routine operations easier, with one-shot height measurements up to 40mm, without Z-scanning
- ▣ Achievement of sub-micron height repeatability over entire extended area
- ▣ Color acquisition with the best resolution thanks to the integrated 5Mpx camera
- ▣ Form deviation from 3D CAD models for an effective integration with daily internal processes

硬體特徵

CONFIGURATION

Hardware features

SENSOFAR.
METROLOGY



Table-top system

55 Kg (121 lbs)



Integrable head

8 Kg (18 lbs)

PORTFOLIO 2020

原廠支架載台選擇

CONFIGURATION

Hardware features

SENSOFAR.
METROLOGY



Standard



High



Wide



High & Wide

XY stage 154 x 154 mm
Weight 10 kg

XY stage 302 x 302 mm
Weight 25 kg

手動調整機構可適用於更高的樣品

SENSORHEAD DESIGN

Hardware features

SENSOFAR.
METROLOGY

Adjustable
column & lock
position

**MAX. SAMPLE
HEIGHT**
105 - 280 mm

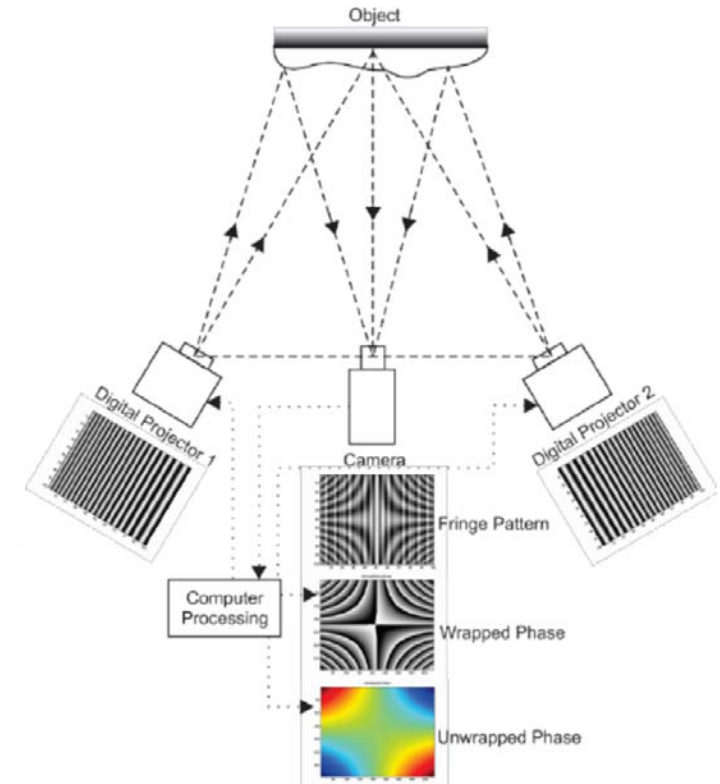


照明系統:

- > 條紋投影LED燈源為綠光(530 nm) & 藍光 (460 nm) ;
- > 白光LED環燈



條紋投影掃描設計



INTERNAL DESIGN

Hardware features

Objective lenses

MAG	0.243X
NA	0.015
WD (mm)	80
FOV ¹ (mm)	34.7 x 29.1
Spatial sampling ² (μm)	14.2
Optical resolution ³ (μm)	9.35

¹ Maximum field of view with 3/2" camera. ² Pixel size on the surface. ³ L&S: Line and Space. Values for blue LED.



標準支架外觀尺寸

DIMENSIONS

Hardware features

SENSOFAR.
METROLOGY



解決方案領域應用

SOLUTIONS

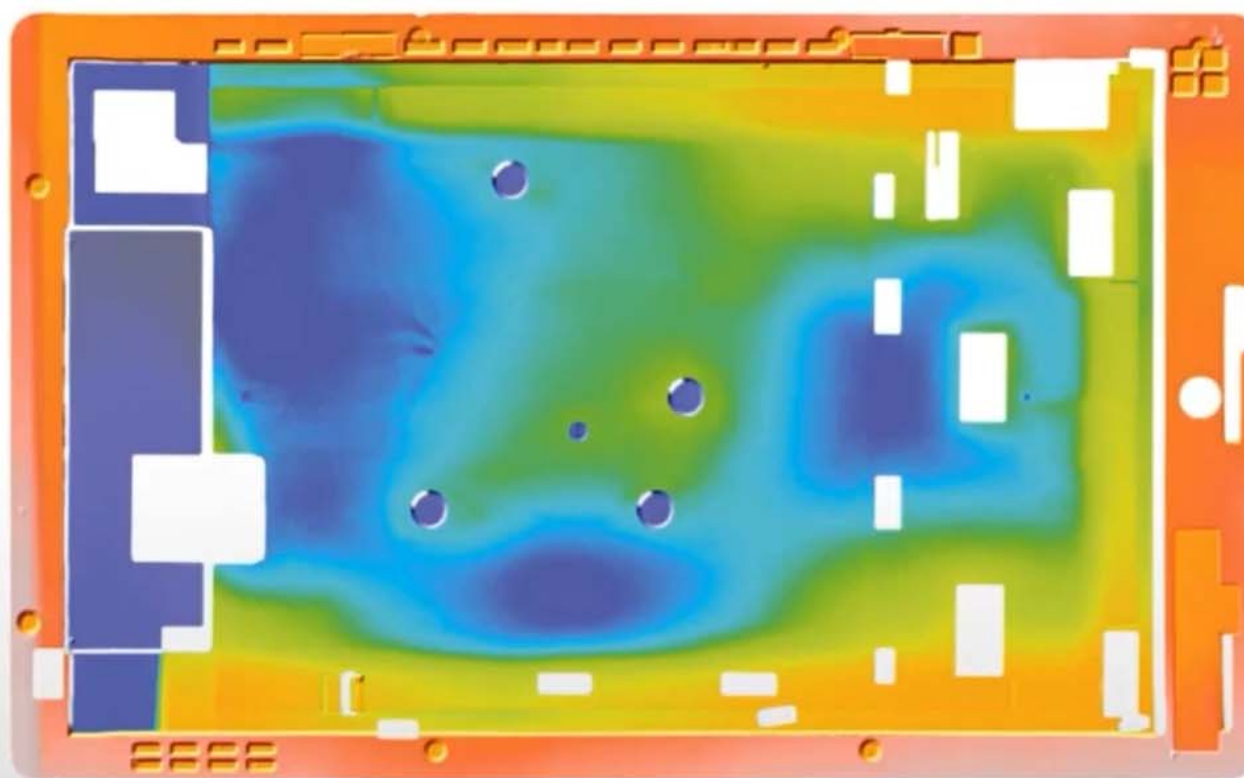
- ▣ Advanced manufacturing (先進製造)
- ▣ Archaeology & Paleontology (考古學和古生物學)
- ▣ Consumer electronics (消費類電子產品)
- ▣ Medical devices (醫療設備)
- ▣ Molding (成型)
- ▣ Optics (光學)
- ▣ Watch industry (鐘錶工業)

SENSOFAR.
METROLOGY

射出成形樣品

CONSUMER ELECTRONICS

Molding



SENSOFAR.
METROLOGY

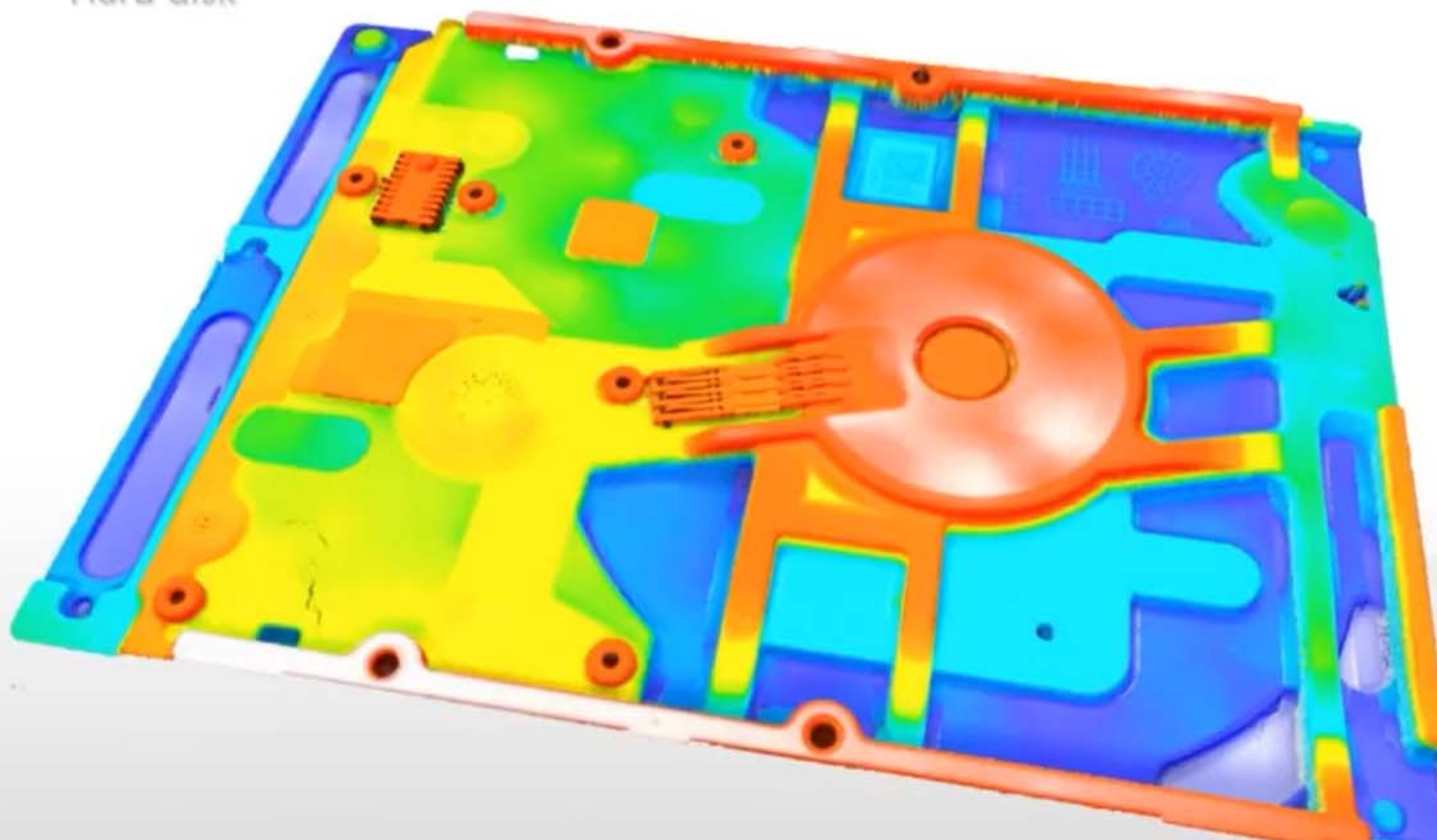
194 x 122 mm
34 Mpx
5'

硬碟背面表面構造

CONSUMER ELECTRONICS

Hard disk

SENSOFAR.
METROLOGY



154 x 108 mm
23 Mpx
3'

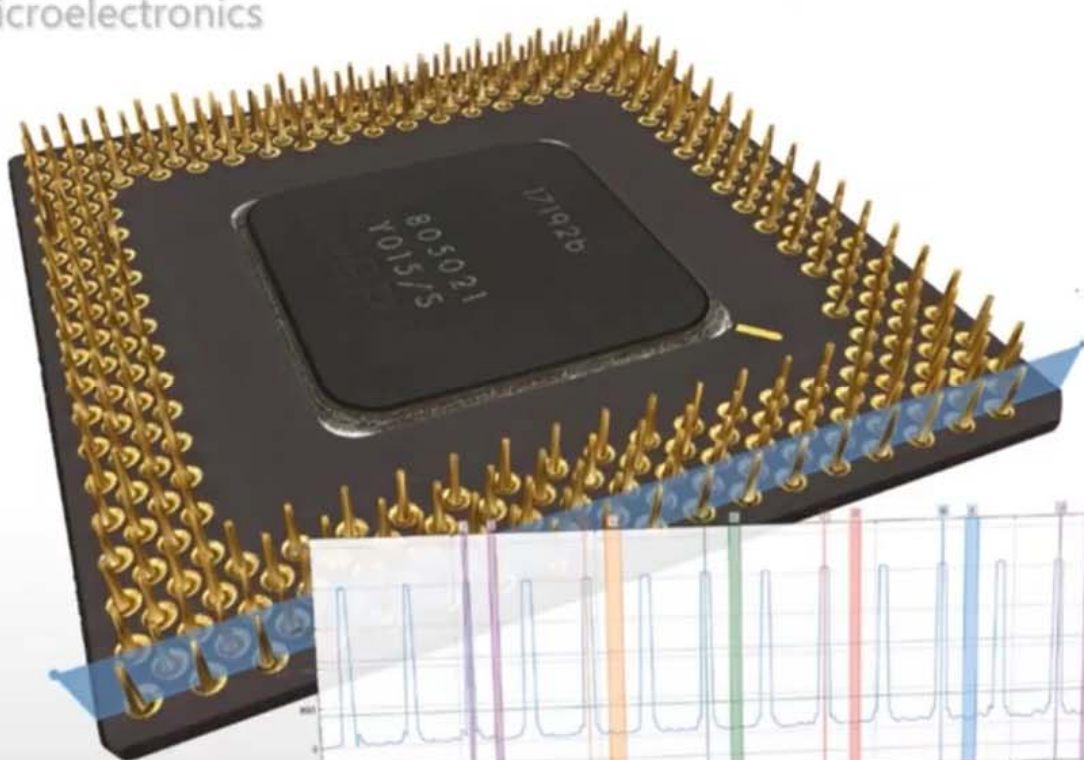
SENSOFAR PORTFOLIO 2020

微電子處理器

CONSUMER ELECTRONICS

Microelectronics

SENSOFAR.
METROLOGY



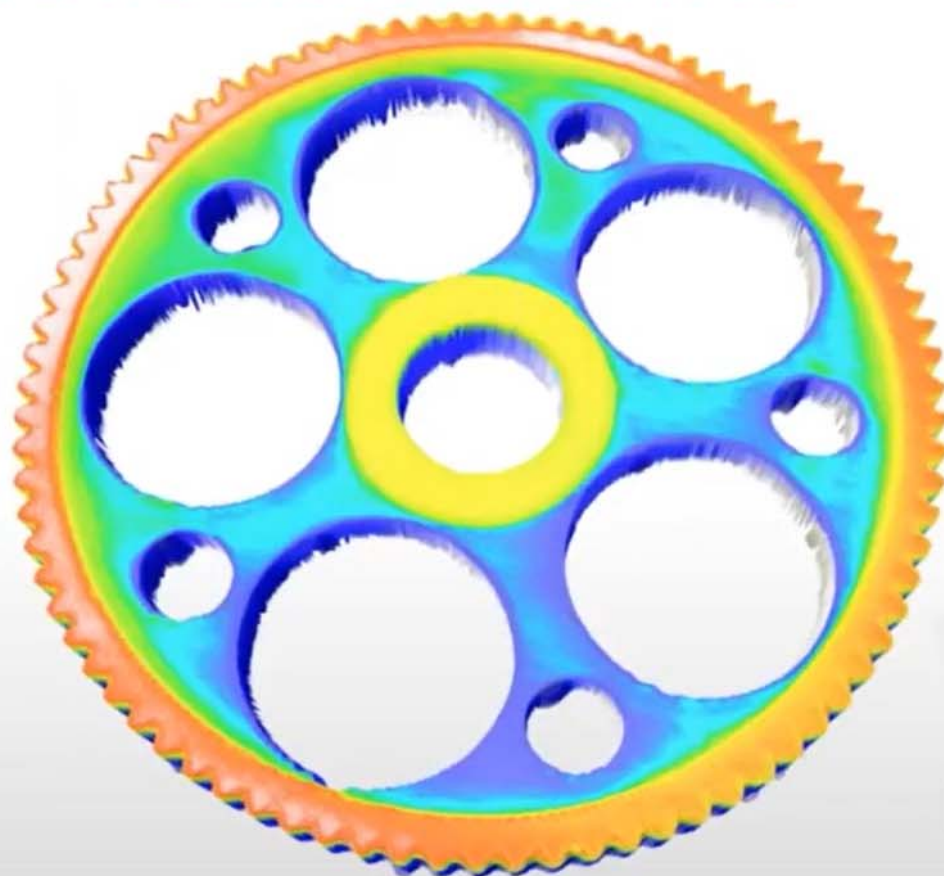
- 87 x 73 mm
- 31 Mpx
- 2' 30"

SENSOFAR PORTFOLIO 2020

射出成形樣品—平齒輪

ADDITIVE MANUFACTURING

Molding



SENSOFAR.
METROLOGY

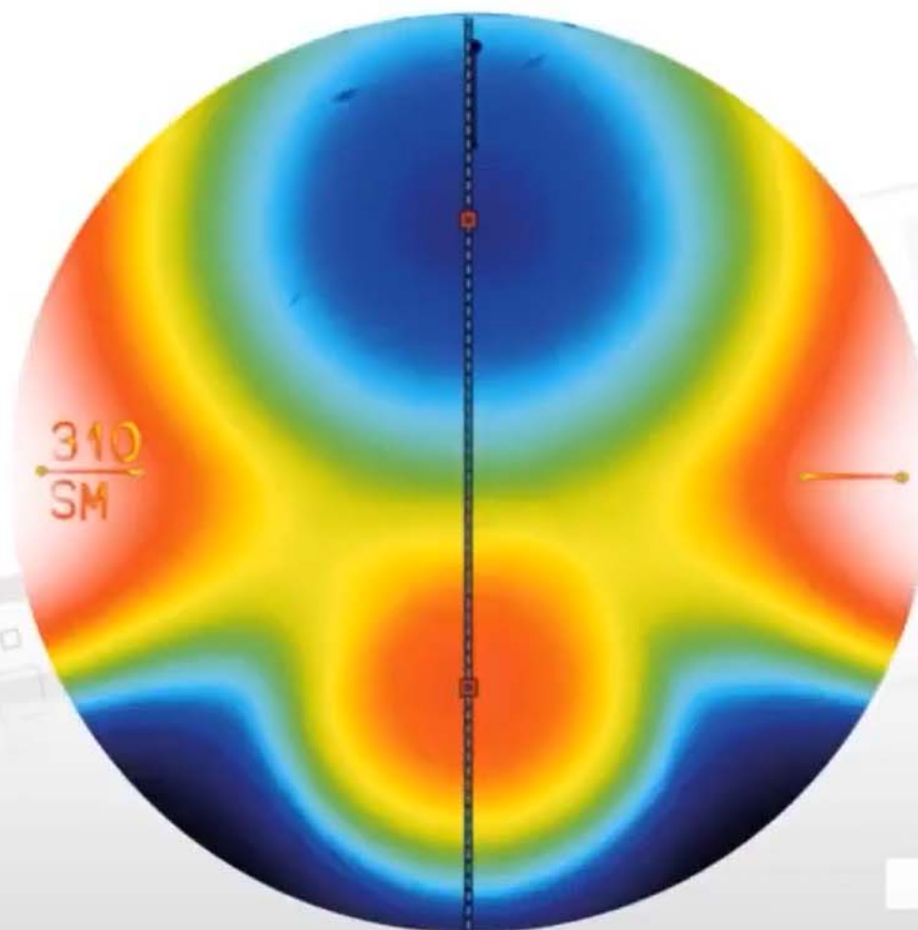
35 x 29 mm
5 Mpx
11"

SENSOFAR PORTFOLIO 2020

光學樣品—PAL模具

OPTICS
PAL Mold

SENSOFAR.
METROLOGY

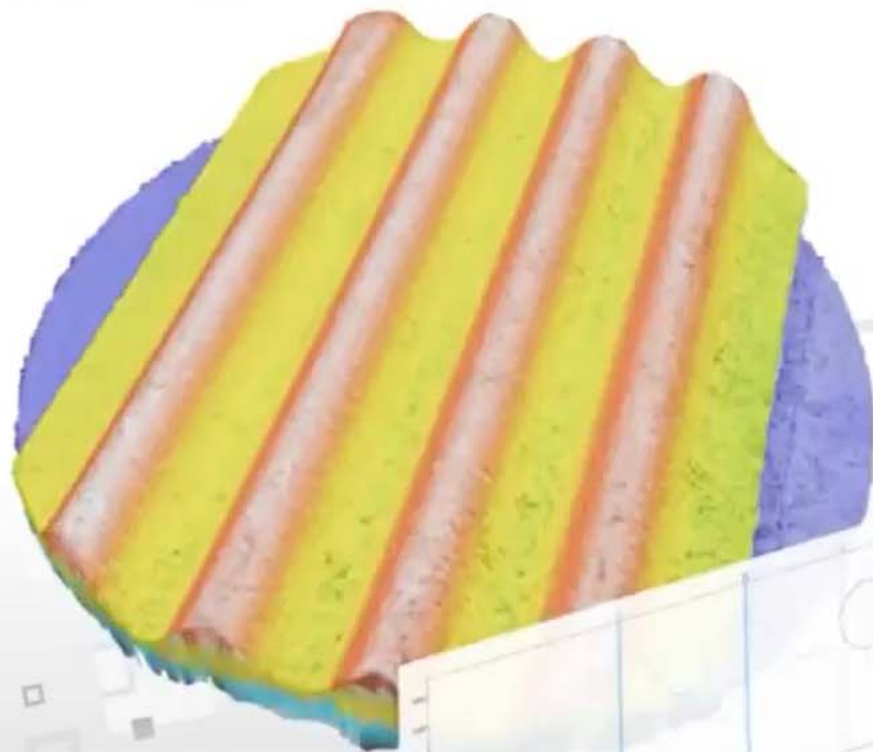



85 x 85 mm
9 Mpx
1' 44"

光學樣品—照明鏡片

OPTICS
Illumination lenses*

SENSOFAR.
METROLOGY



35 x 29 mm
5 Mpx
11" 

手錶蕊心

WATCH INDUSTRY

Gears

SENSOFAR.
METROLOGY



35 x 29 mm

5 Mpx

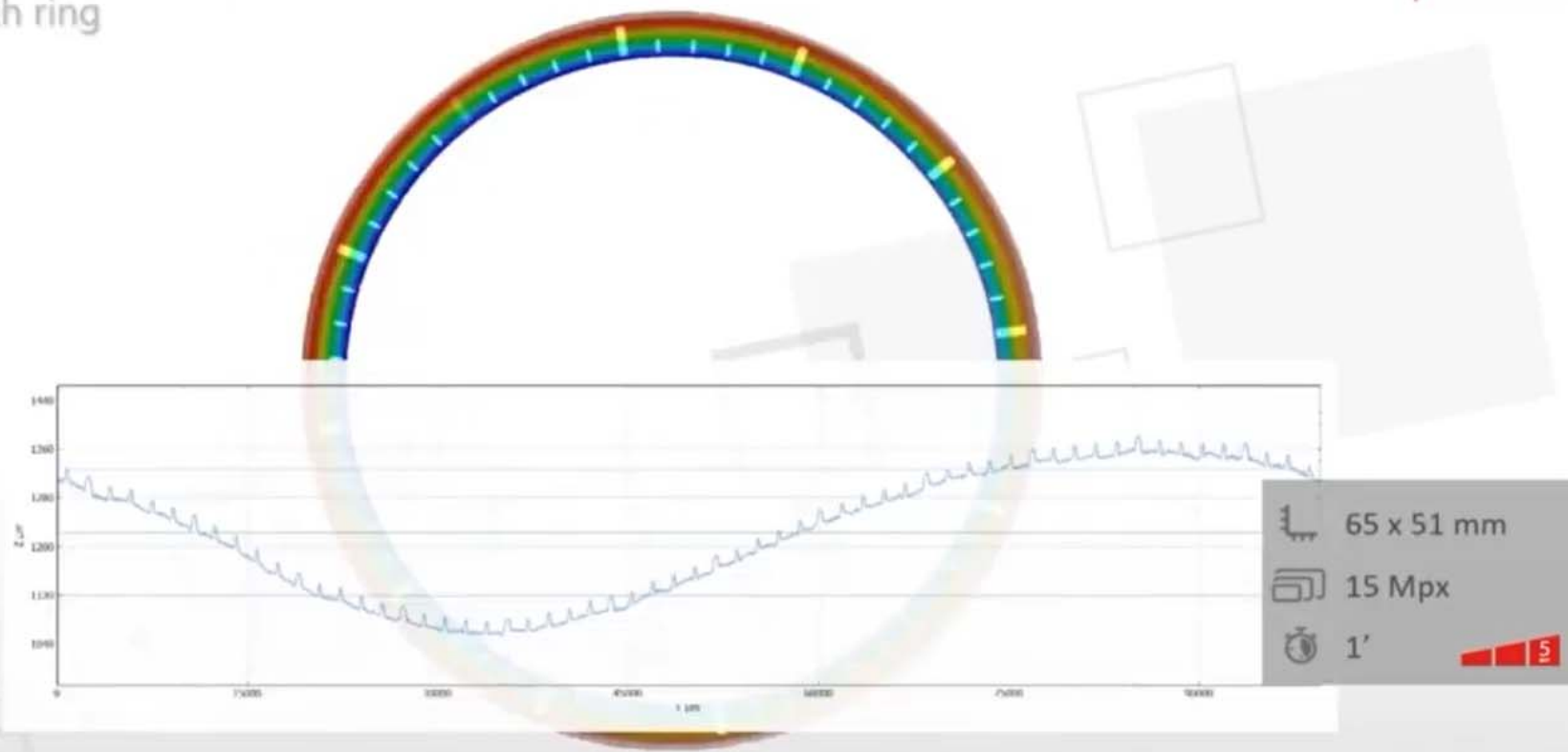
11"



手錶表圈

WATCH INDUSTRY
Watch ring

SENSOFAR.
METROLOGY

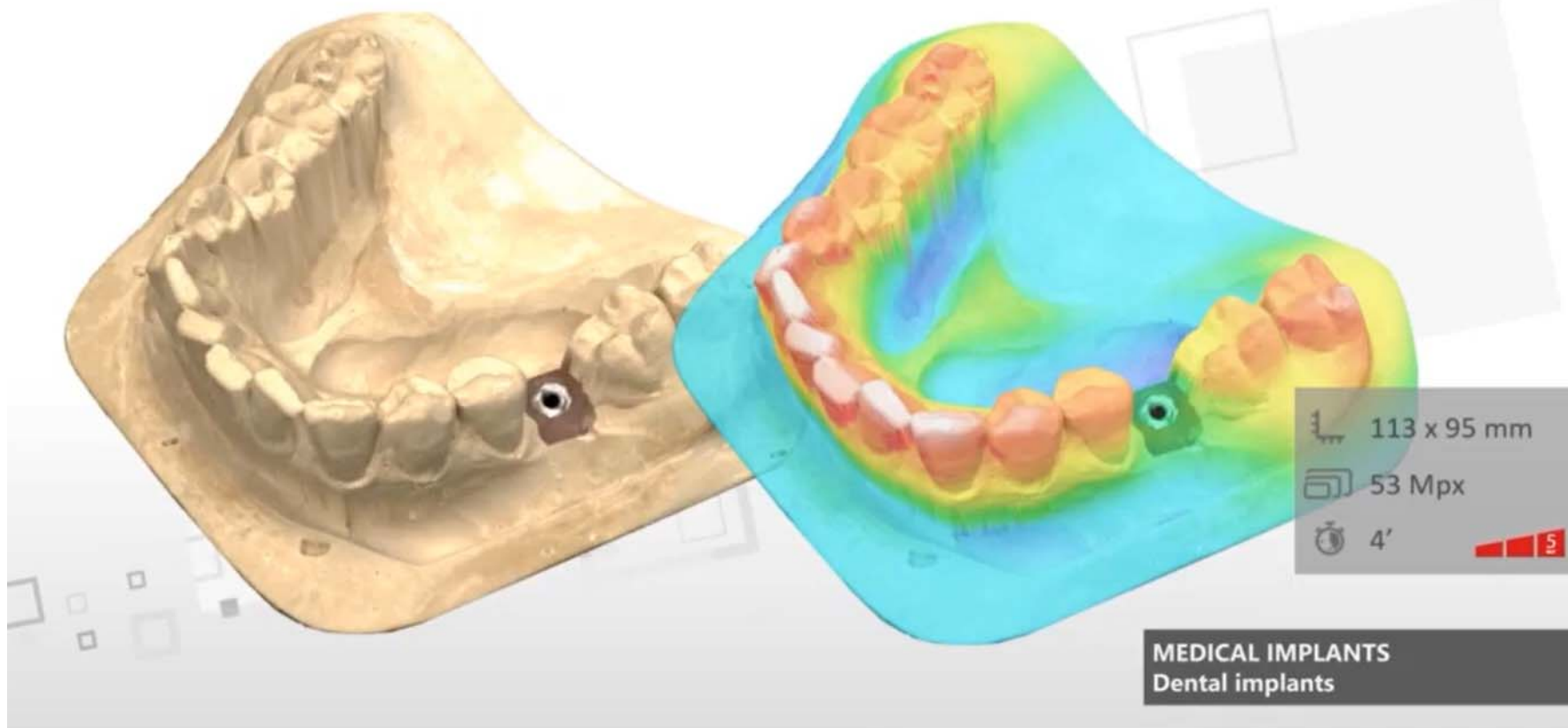


植牙齒模

MEDICAL DEVICES

Dental implants

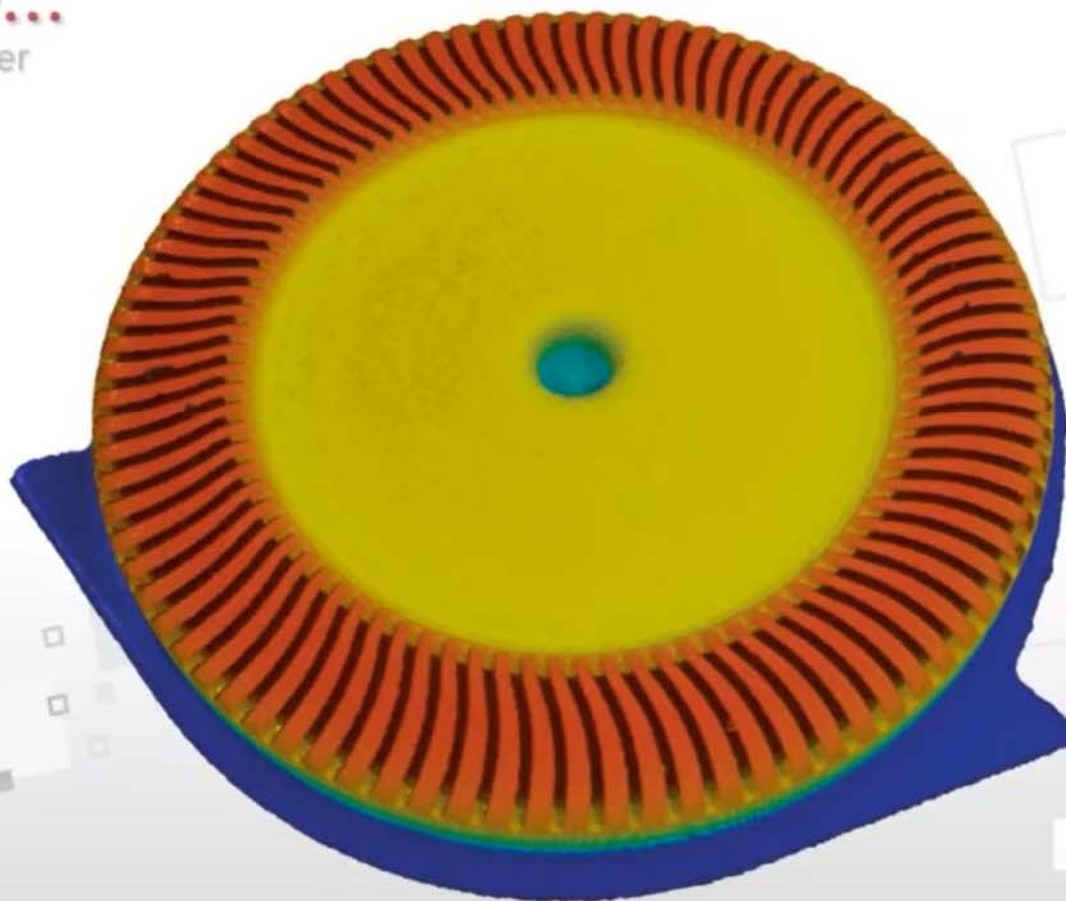
SENSOFAR.
METROLOGY



圓形剃鬚刀蓋

AND...
Razor cover

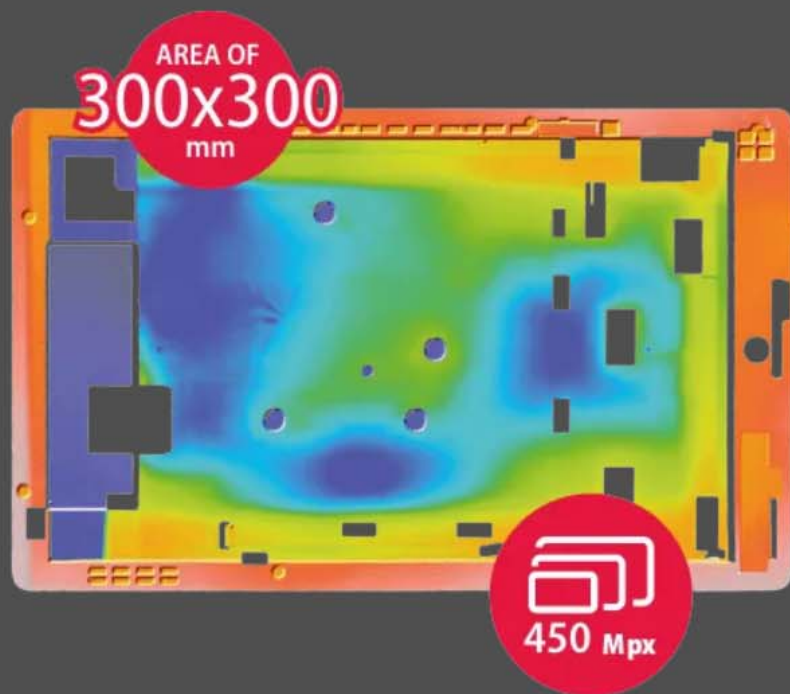
SENSOFAR.
METROLOGY



35 x 29 mm
5 Mpx
11" 

單次最大拼圖容量達450 Mpx

Optional modules



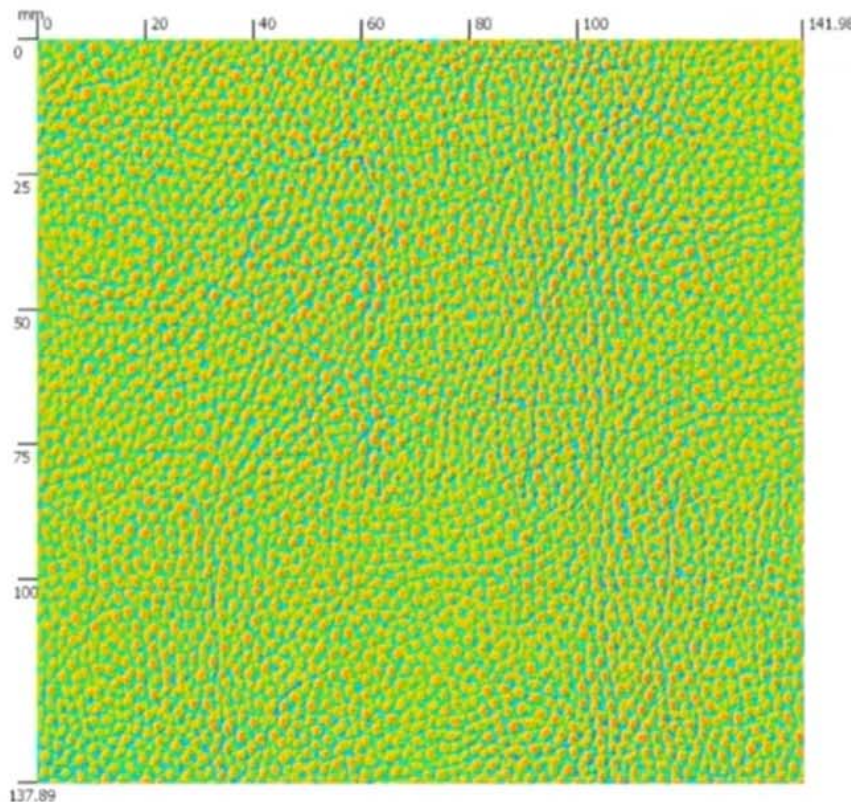
Extended measurements

SensoSCAN's extended measurements module allows the user to easily define the measurement layout. Wide areas of up to 450 million pixels are possible.


150x 150 mm範圍實測只要3.5分鐘

MAXIMUM EXTENDED AREA

Features



SENSOFAR.
METROLOGY

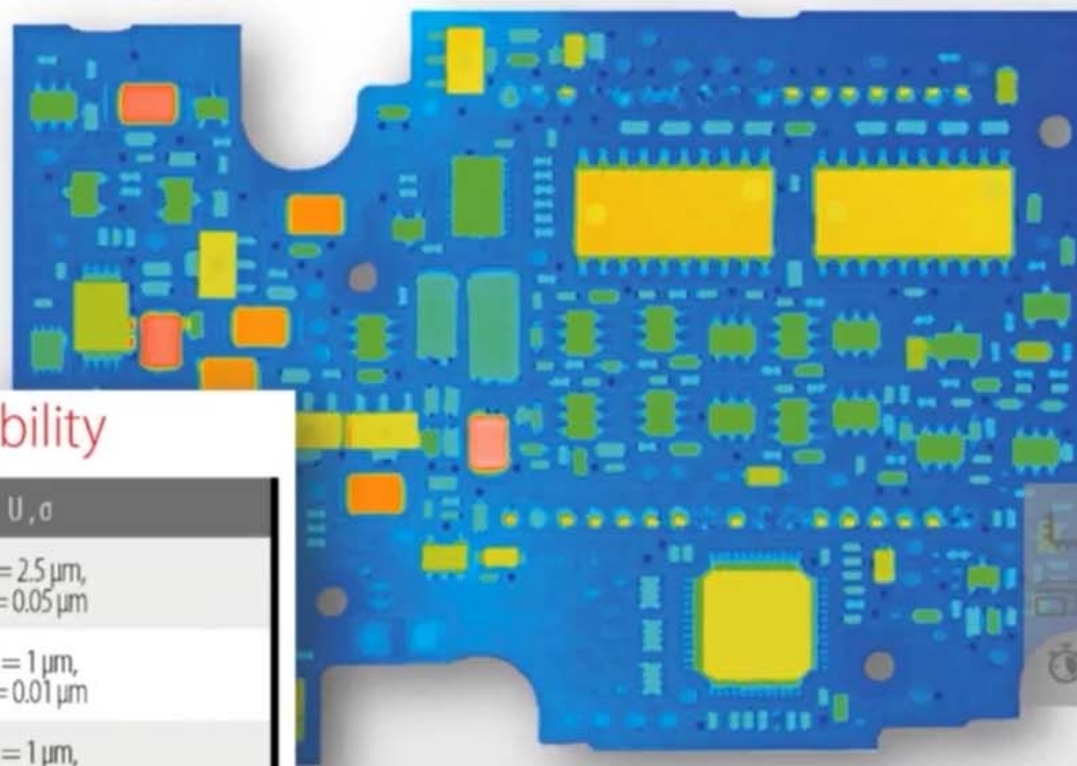
152 x 151 mm
28,6 Mpx
3' 33" 

基板

METROLOGY

Features

SENSOFAR.
METROLOGY



Accuracy and repeatability

Standard	U, σ
Step height	U = 2.5 μm , σ = 0.05 μm
Area roughness (Sa)	U = 1 μm , σ = 0.01 μm
Profile roughness (Ra)	U = 1 μm , σ = 0.05 μm

94 x 54 mm
6 Mpx
38"

大型基板

LARGE DEPTH OF FOCUS

Features

SENSOFAR.
METROLOGY



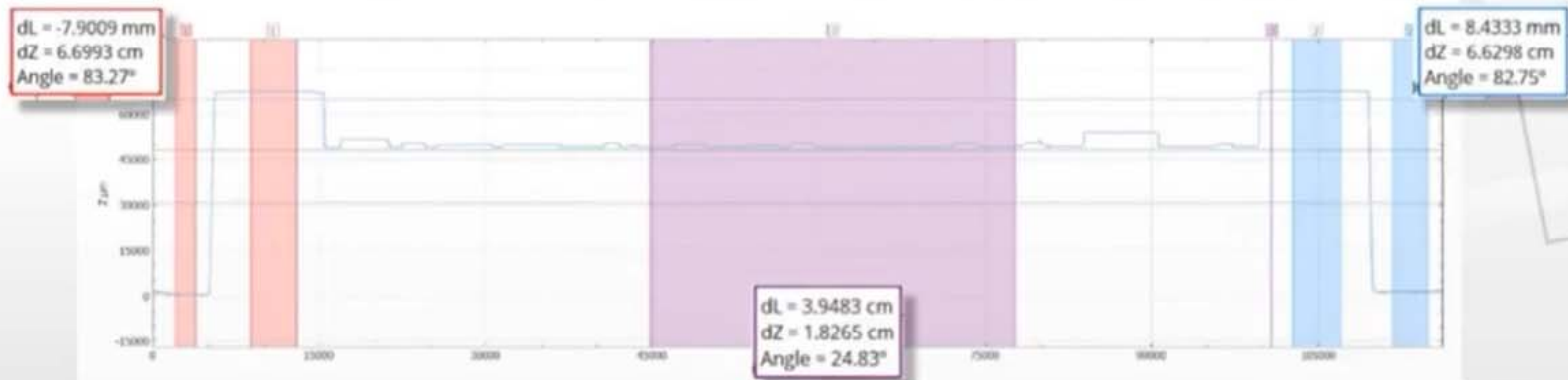
- 113 x 116 mm
- 65 Mpx
- 5'

大型基板輪廓線分析

LARGE DEPTH OF FOCUS

Features

SENSOFAR.
METROLOGY

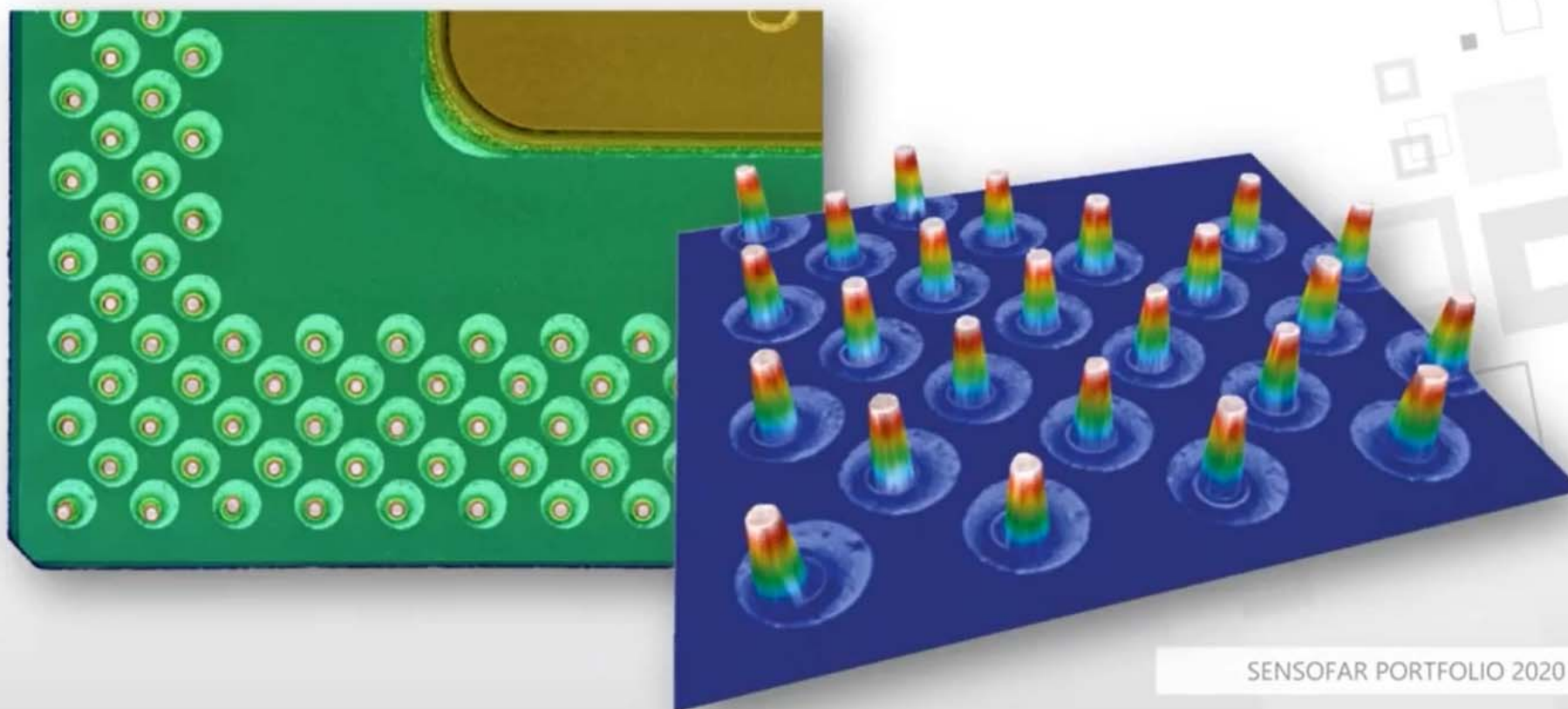


微電子處理器針腳

TELECENTRIC LENSES

Features

SENSOFAR.
METROLOGY

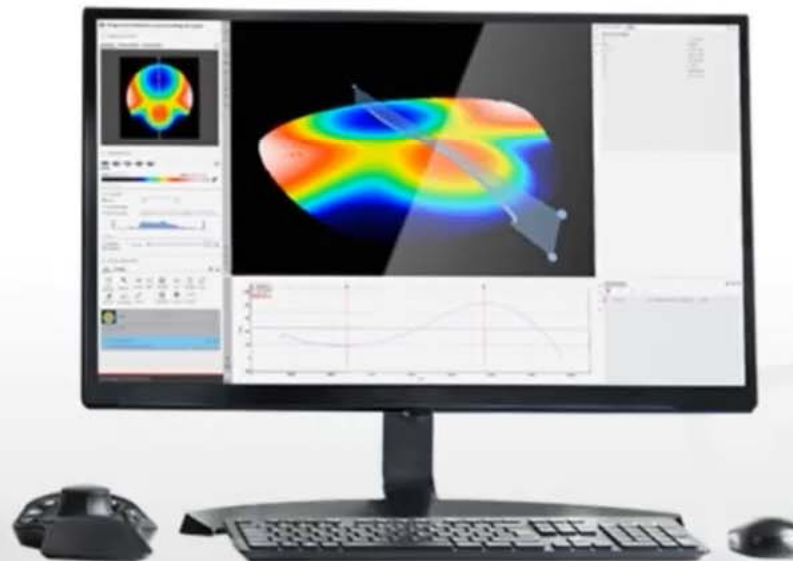


SensoSCAN S wide 拍攝測量軟體

ACQUISITION SOFTWARE
SensoSCAN S wide



SENSOFAR.
METROLOGY



APM & EMM增加產品應用性

ACQUISITION SOFTWARE

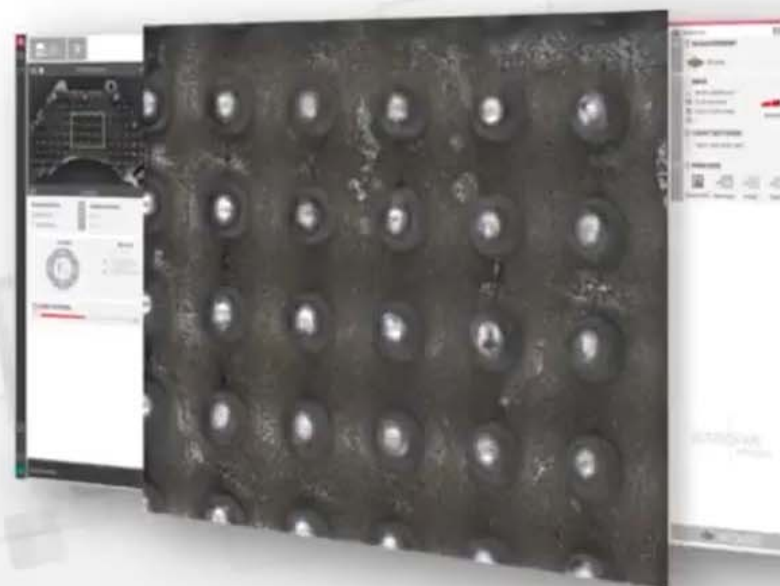
SensoSCAN S wide



SENSOFAR.
METROLOGY



**Automated procedures
module (APM)**



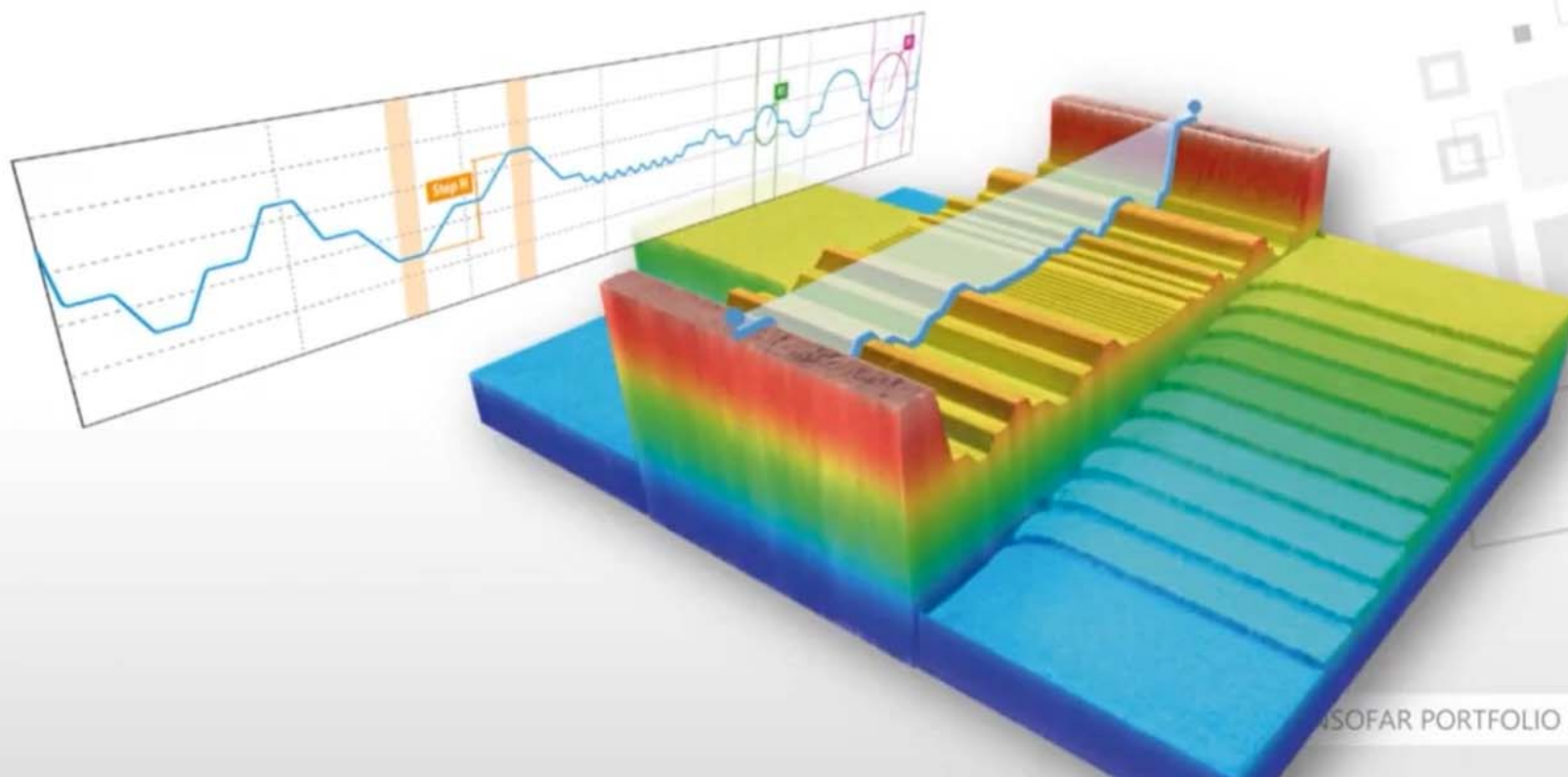
**Extended measurement
module (EMM)**

SensoView分析軟體

ANALYSIS SOFTWARE
SensoVIEW



SENSOFAR.
METROLOGY

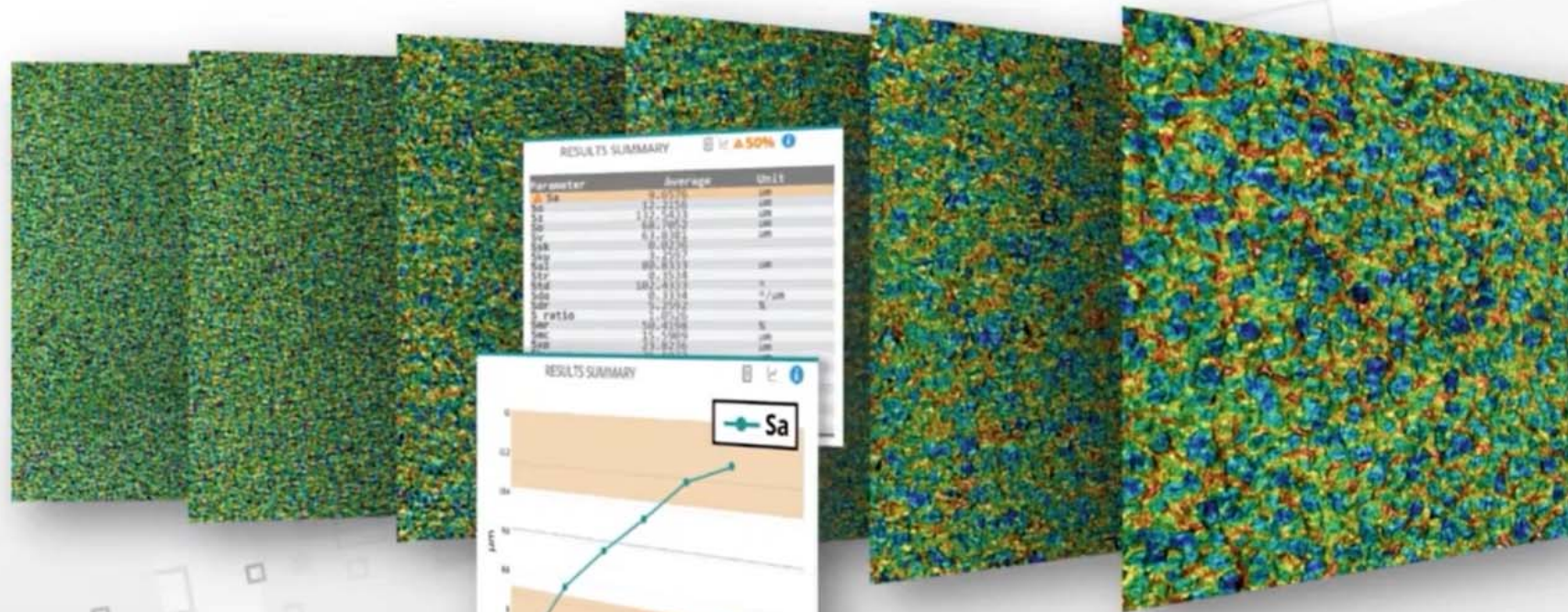


SensoPRO 批次分析軟體

ANALYSIS SOFTWARE
SensoPRO



SENSOFAR.
METROLOGY

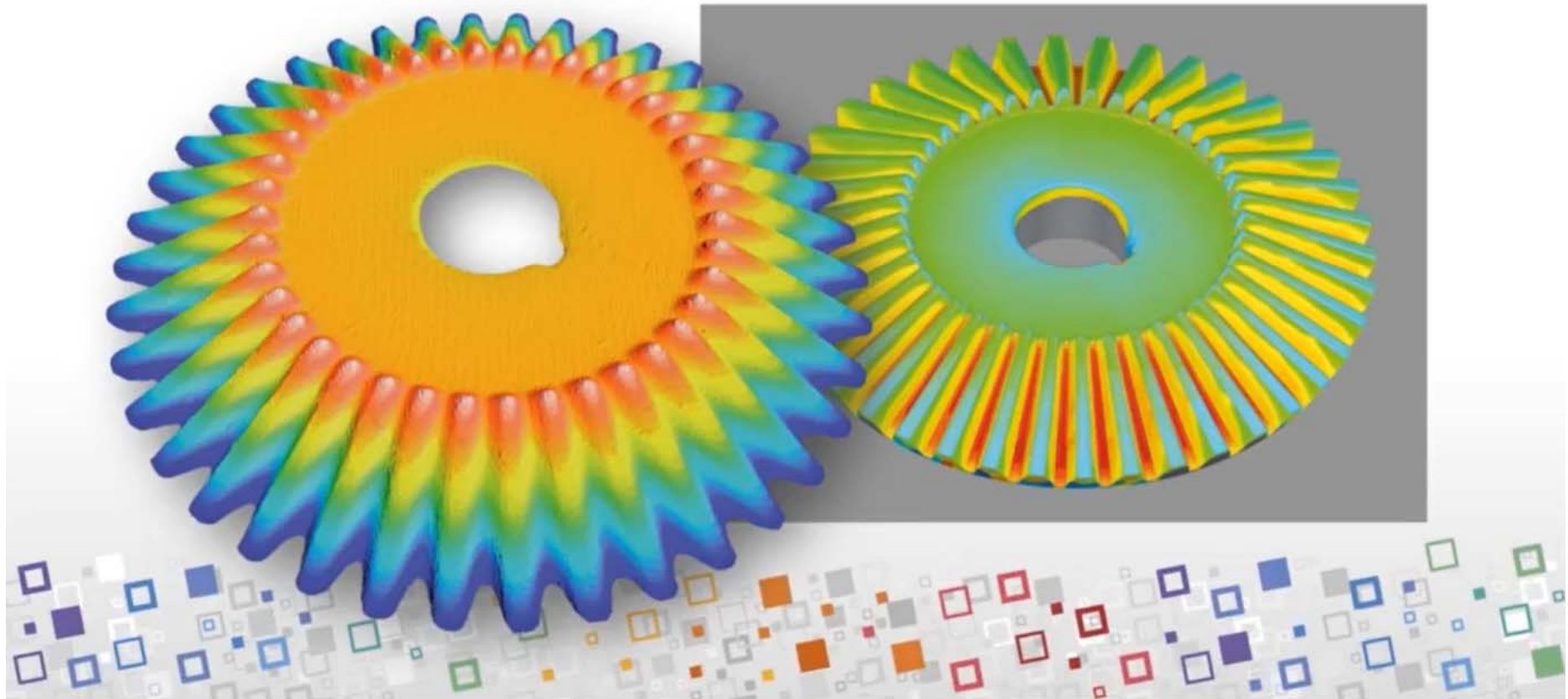


Sa: 7 µm to 11 µm

轉出3D CAD檔可相容Geomagic ControlX 軟體進行3D CAD比對

ANALYSIS SOFTWARE

Geomagic



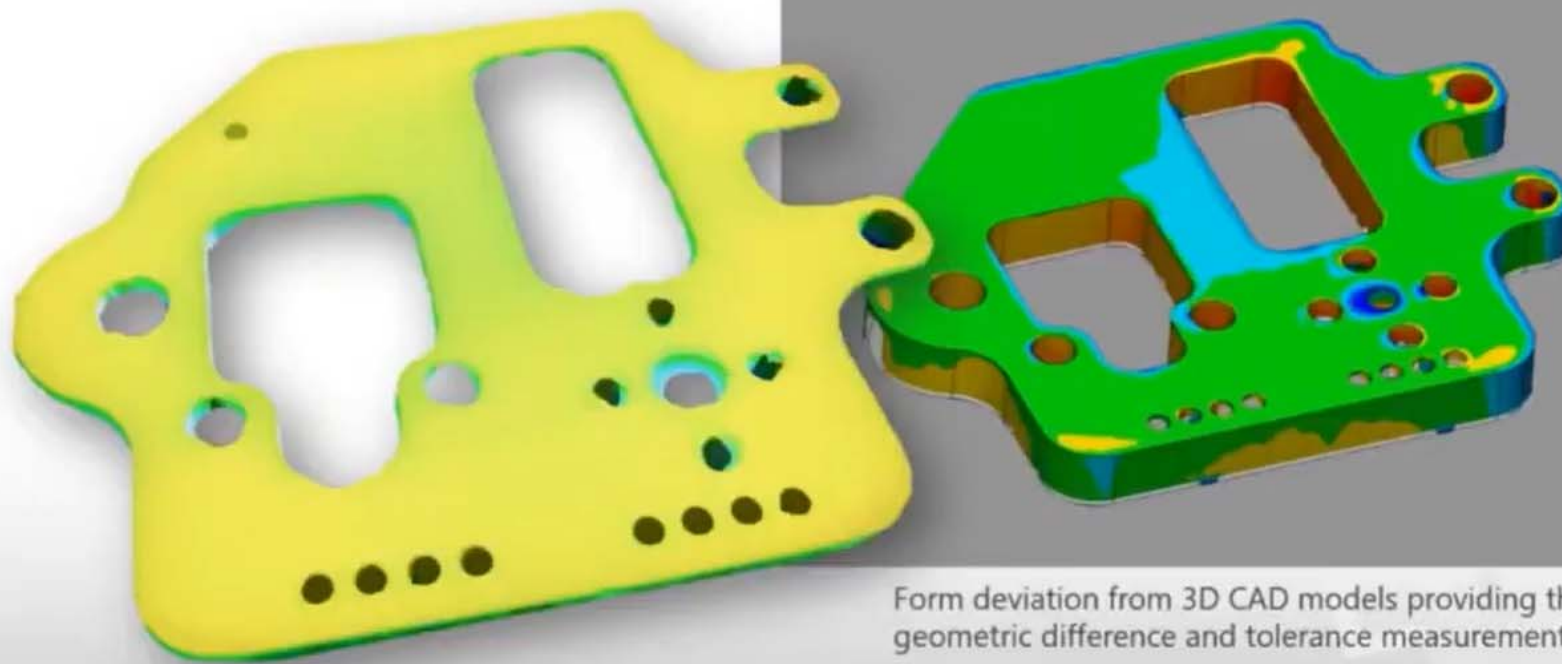
轉出3D CAD檔可相容Geomagic ControlX 軟體進行3D CAD比對

ANALYSIS SOFTWARE

Geomagic



SENSOFAR.
METROLOGY



Form deviation from 3D CAD models providing the geometric difference and tolerance measurement

S wide的校驗塊規和測試樣品

ACCESORIES

Hardware features

▣ Specimens:

- ▣ S wide calibration specimen
(w/system)



- ▣ Verification specimen (Sensofar certified)



實體呈現



The screenshot displays the SensoVIEW software interface. The central area shows a 3D perspective view of a metal component with a series of parallel ridges. To the left, there is a toolbar with various icons, and a '3D Profile' section with a red box highlighting a specific icon. Below the 3D view, a 2D profile graph is visible, showing a series of peaks and valleys. The graph's y-axis is labeled 'μm' and ranges from 0 to 6000. The x-axis is labeled 'L μm' and ranges from 0 to 27000. On the right side, there are two 'Annotations' windows. The top one is titled 'ISO' and lists various ISO 25178 parameters with their corresponding values. The bottom one is titled 'Annotations' and is currently empty.

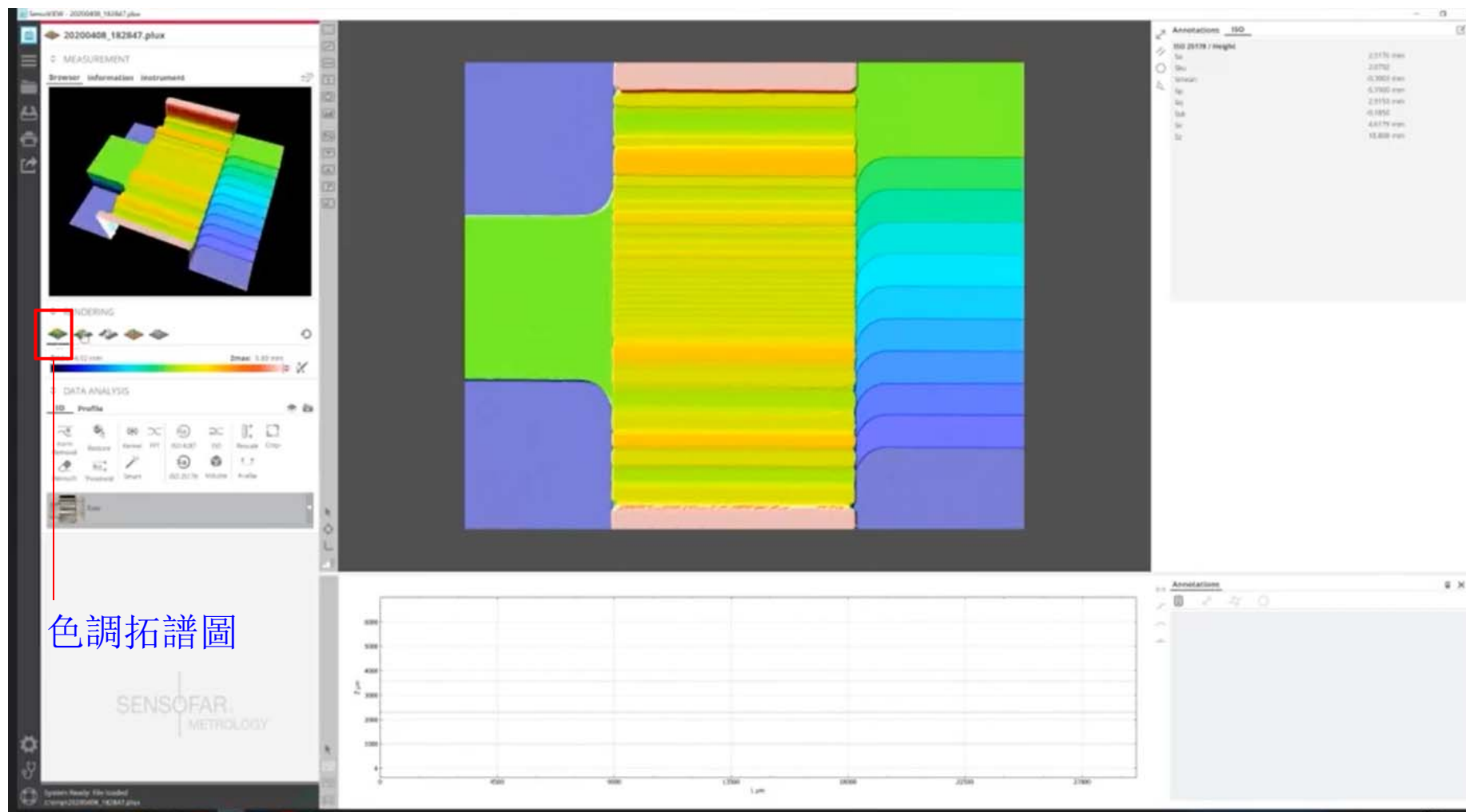
ISO 25178 / Height	Value
Sa	2.5176 mm
Sk	2.2792
Sms	-0.3003 mm
Sp	6.1900 mm
Sq	2.9153 mm
Ssk	-0.1850
Sv	4.6179 mm
Sz	10.808 mm

SENSOFAR METROLOGY

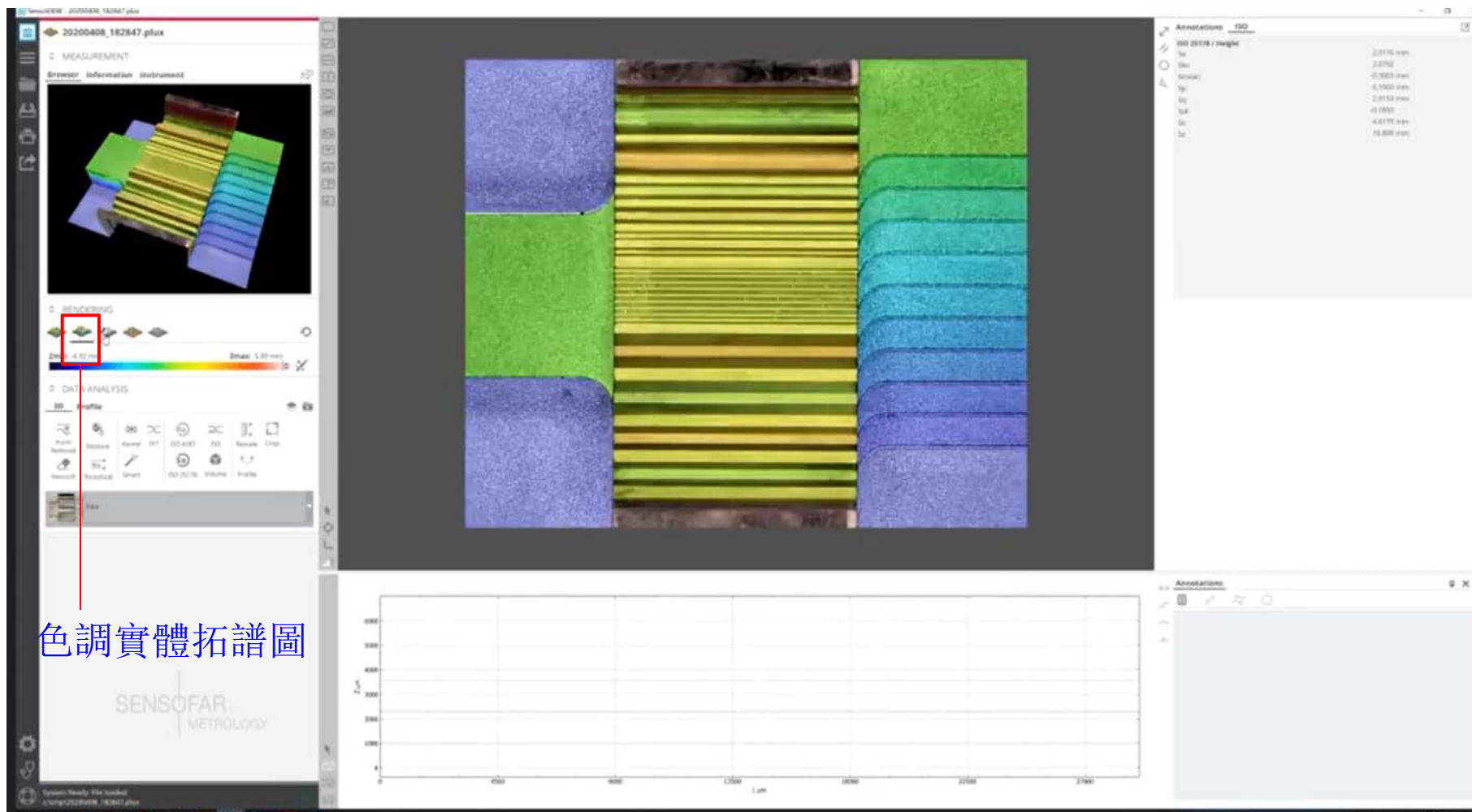
System Ready. File loaded: 20200408_182847.plux

實體呈現

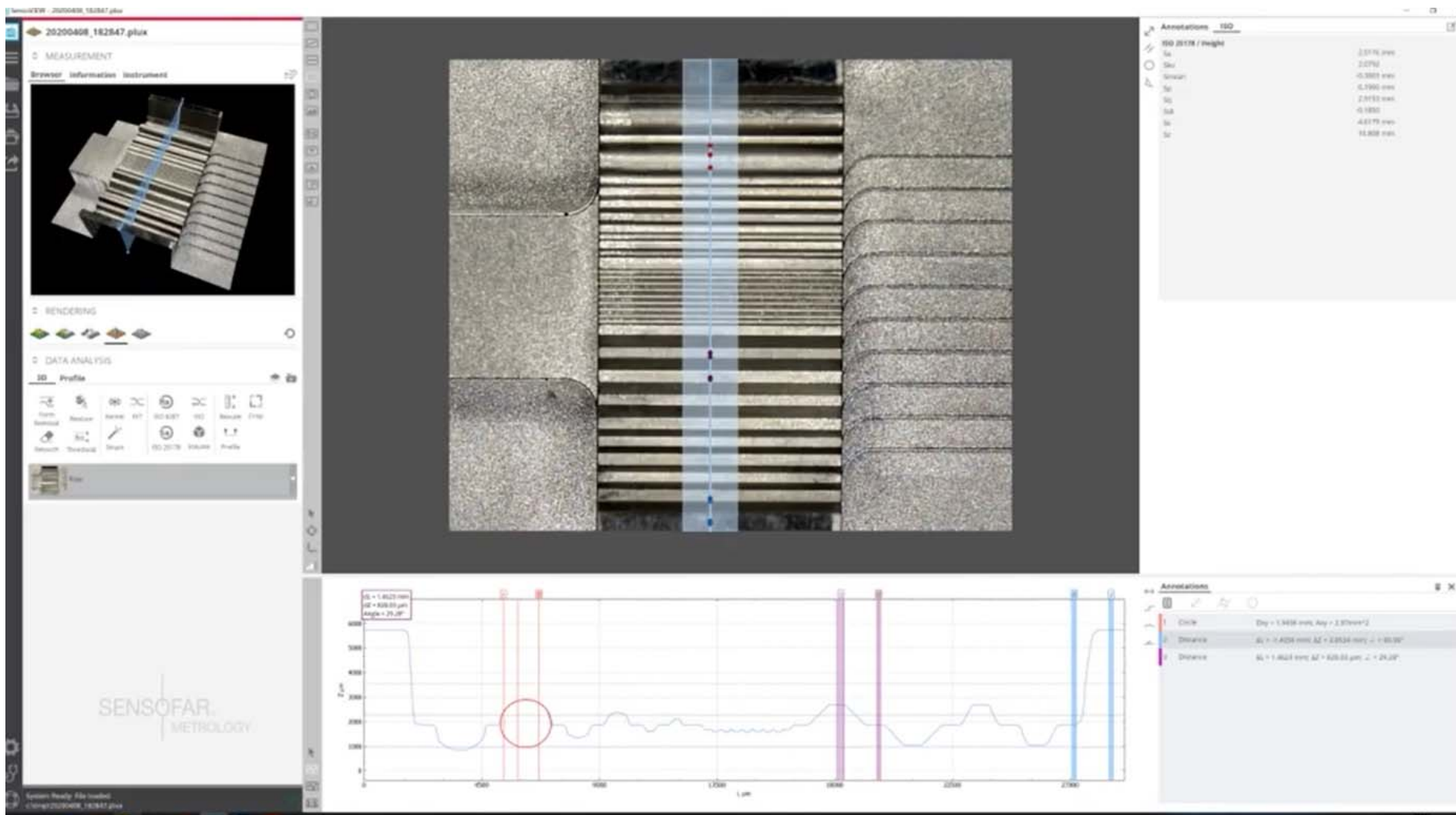
等高色調拓譜圖



等高色調實體拓譜圖



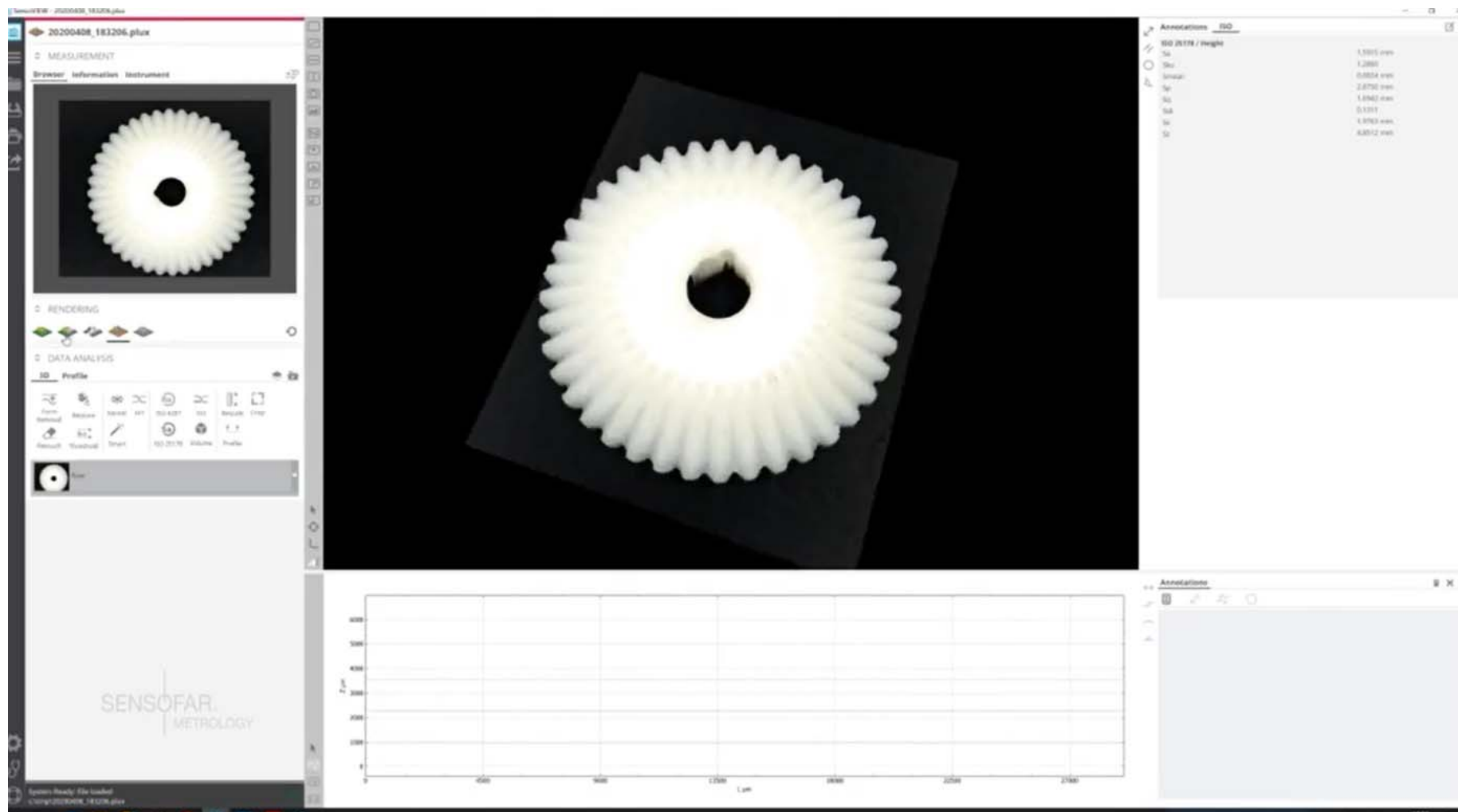
直線分析線—垂直圓直徑、垂直角度、高度差



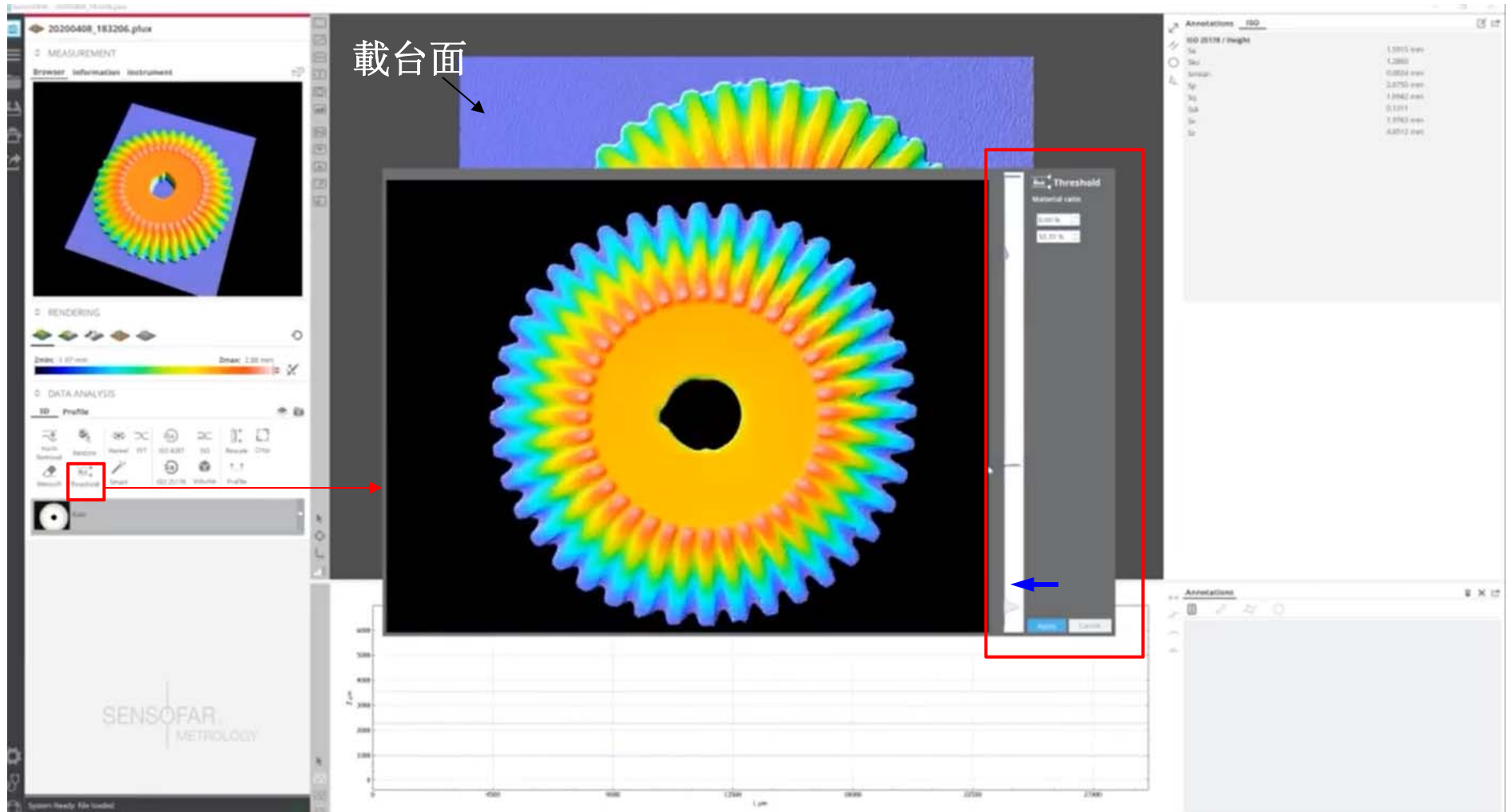
塑膠平齒輪動態影像



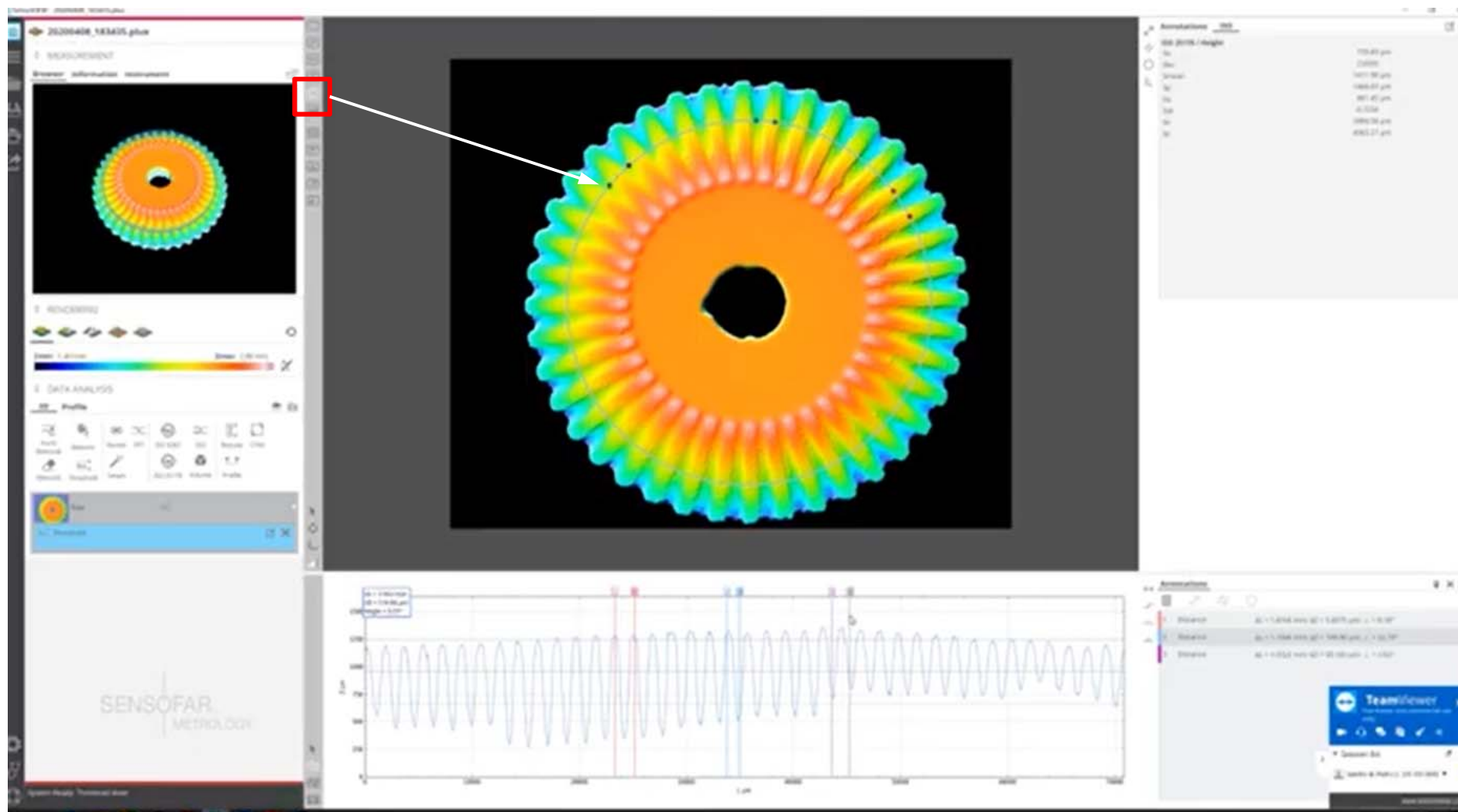
塑膠平齒輪測量完的3D實體呈現



高度色階拓譜圖的紫色區塊為載台面，
透過Threshold調整去除



圓形分析線將表面輪廓擴展到下方呈現線輪廓



EMM功能可大範圍拼圖



The screenshot displays the SPCAN 5 software interface. The central focus is a large, dark image of a microchip with the following text overlaid: "F6171926CB", "A4", "A80502150", "SY015/SSS", and "IPP".

On the left side, there is a control panel with the following sections:

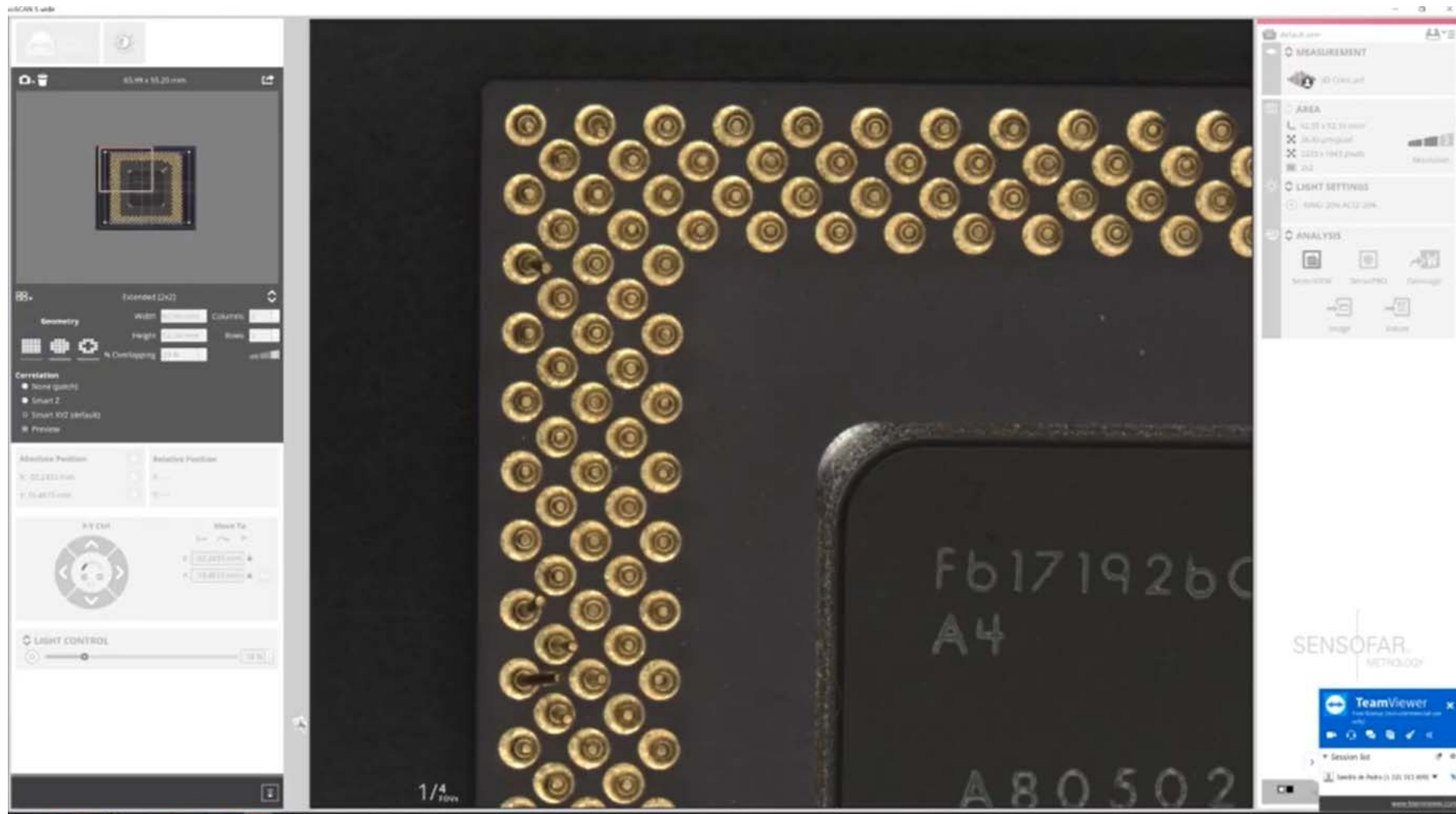
- LOAD SAMPLE**: A button with a lightbulb icon.
- Dimensions**: A box showing "65.98 x 55.20 mm".
- Single ROI**: A small inset image of the chip with a red border.
- Positioning**: "Absolute Position" (X: -18.1463 mm, Y: -1.8564 mm) and "Relative Position" (X: —, Y: —).
- Navigation**: "8-Y Ctrl" with a directional pad and "Move To" fields for X and Y coordinates.
- LIGHT CONTROL**: A slider set to 33%.

On the right side, there is a "MEASUREMENT" panel with the following data:

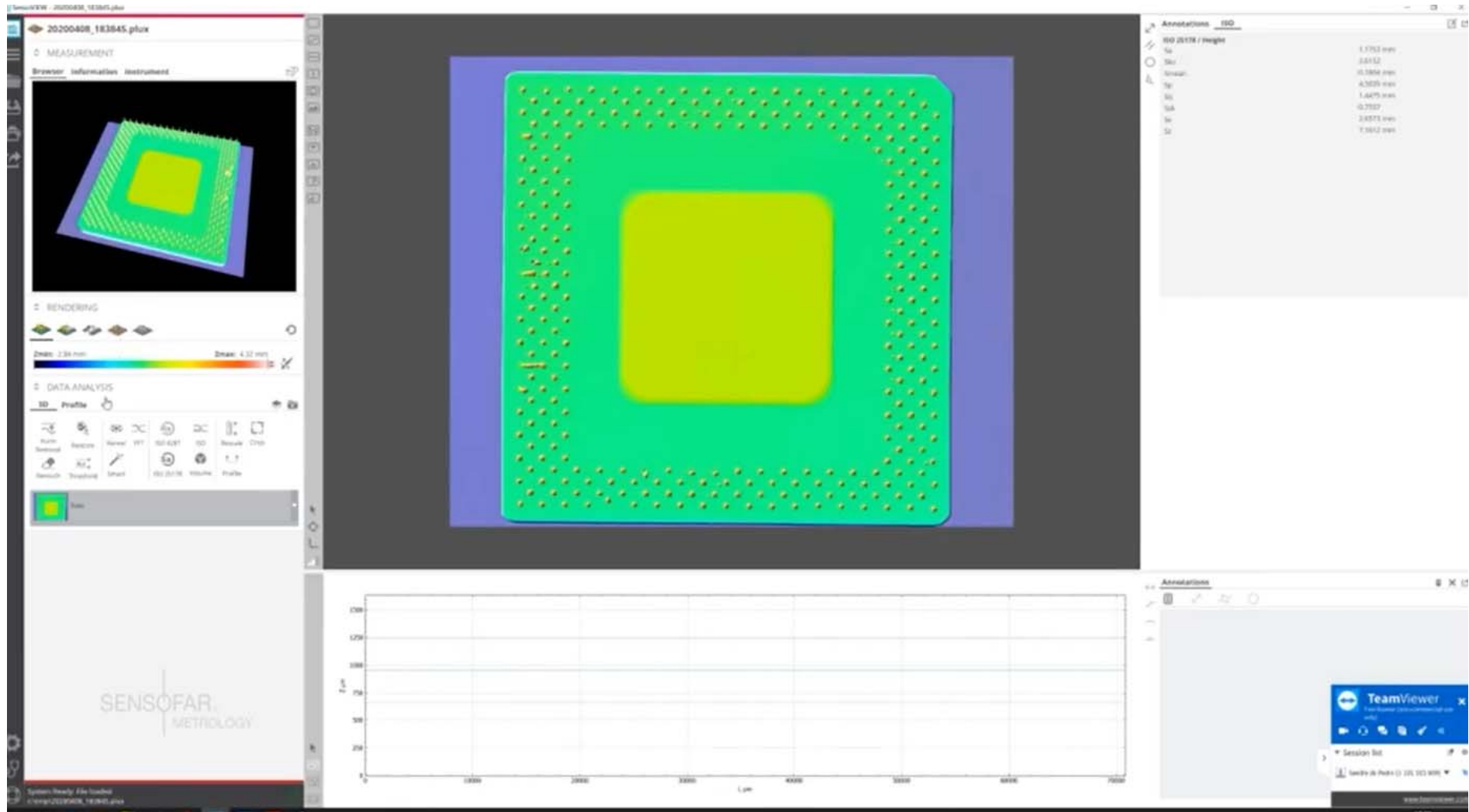
- AREA**: 34.76 x 29.08 mm², 28.40 μm/pixel, 1224 x 1024 pixels.
- LIGHT SETTINGS**: SING: 33% ACQ: 33%.
- ANALYSIS**: Includes icons for "Image" and "Values".

At the bottom right, there is a "TeamViewer" window and a "Session list" showing a session for "Sevito de Pedro (1.221.915.980)".

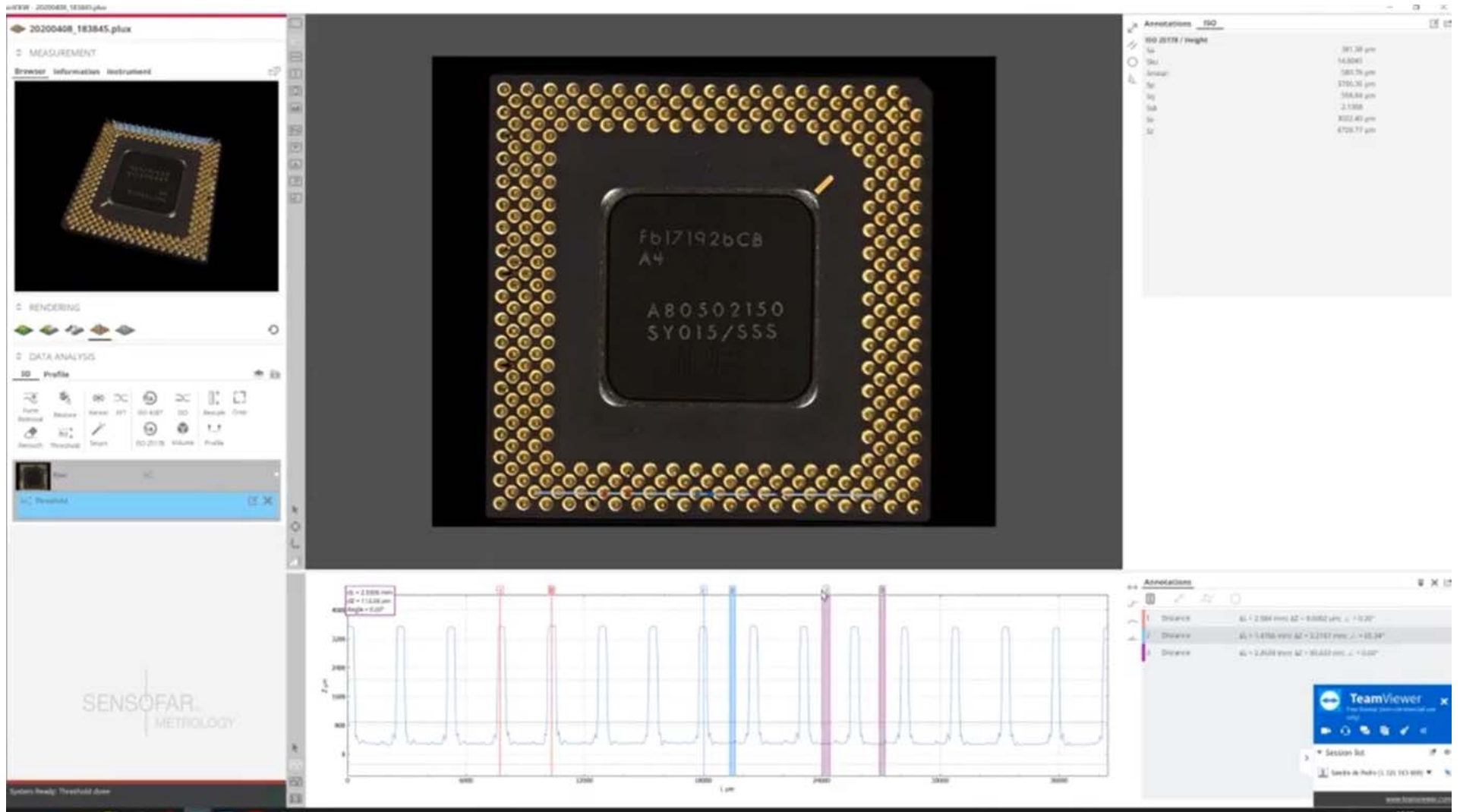
40 mm高度以內皆可快速大範圍拼圖



微電子處理器4X4測量完成，以色階拓譜圖呈現



微電子處理器測量完，去除載台面，
以實體呈現，並分析針腳高度

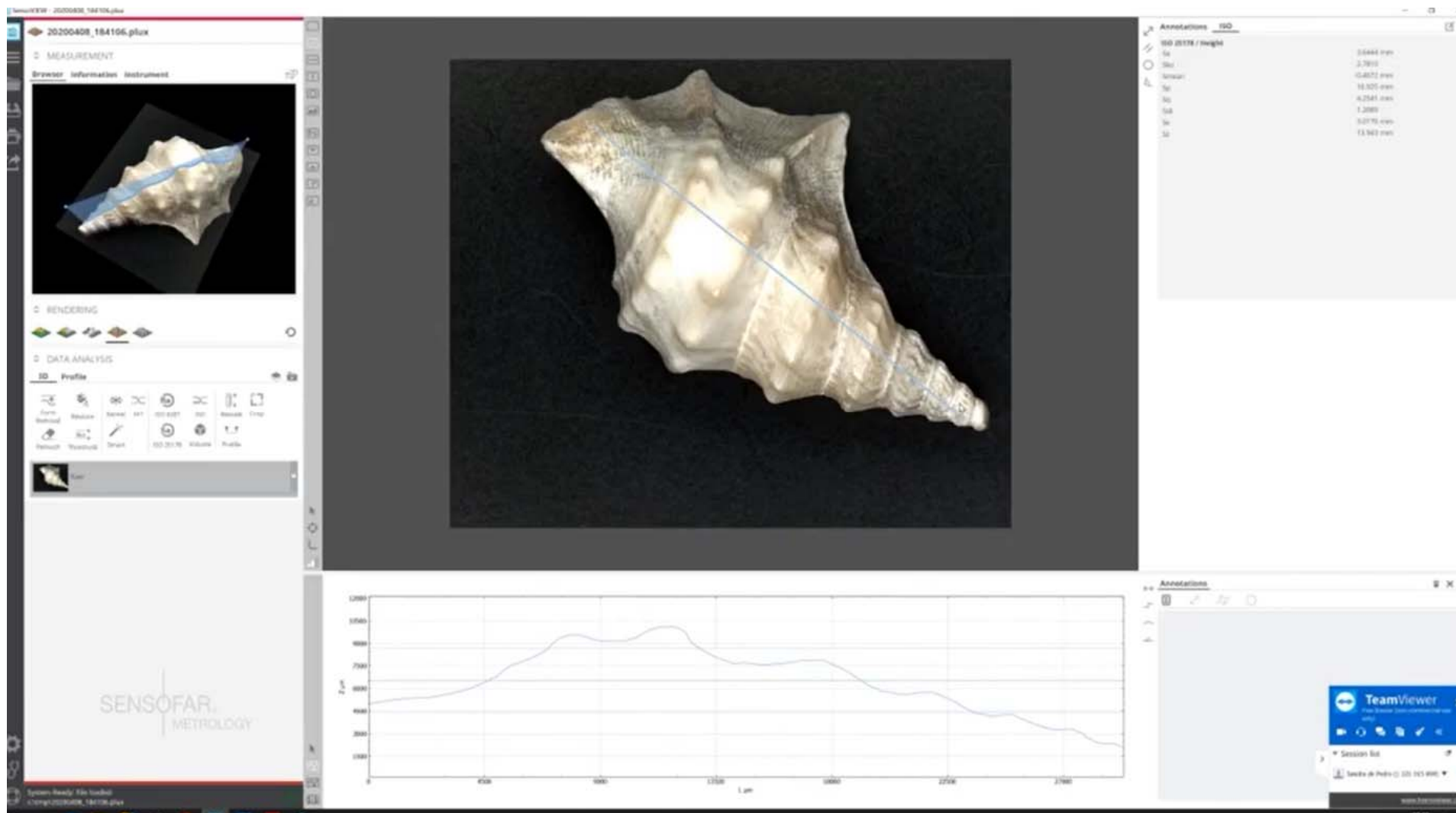


海螺3D輪廓實測



The screenshot displays the SPCAN 3.0 software interface. The central area shows a 3D model of a snail shell. On the left, there is a control panel with a 'Single ROI' section, 'Absolute Position' (X: 92.2432 mm, Y: 35.4818 mm), 'Relative Position' (X: ..., Y: ...), 'XYZ EDIT' (Move To: X: 0.0000 mm, Y: 0.0000 mm, Z: 0.0000 mm), and 'LIGHT CONTROL' with a slider. On the right, there is a 'MEASUREMENT' panel with '3D Calculator', an 'AREA' panel with 'ACTV x 2000 mm', '3D 40 2000x40', and '1204 x 1024 3040', 'LIGHT SETTINGS' with '9992 476 AC12 476', and an 'ANALYSIS' panel with 'Measurement', 'Measurement', and 'Calibration' buttons. At the bottom right, there is a 'SENSOFAR METROLOGY' logo and a 'TeamViewer' window.

海螺3D實體輪廓呈現





Thank you for your attention!!