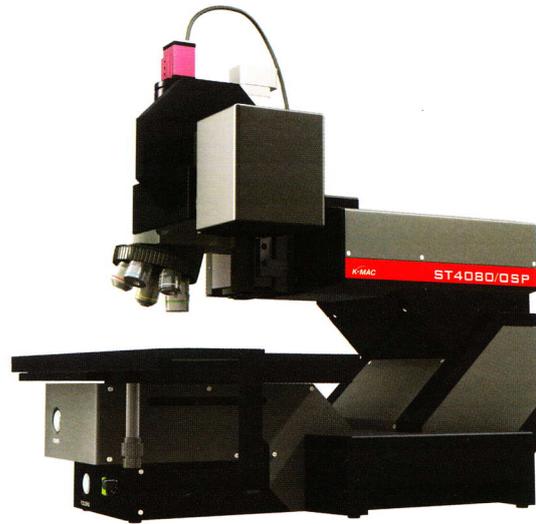


OSP Thickness Measurement System

ST4080

In the circuit industry, the preservative coatings require lead-free applicability pursuant to the RoHS regulation, therefore the use of Organic Solderability Preservative(OSP) becomes essential to protect Cu surfaces from oxidation. The optimum solderability is achieved when there is a combination of simple processing and low cost as well as satisfying the thickness range of between 0.2~0.5 μm .

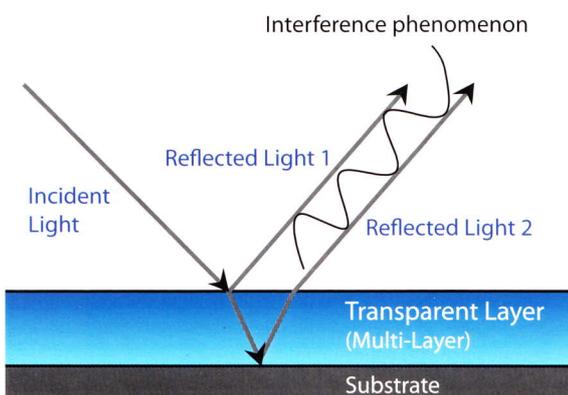
- Non-destructive thickness measurement
- No sample preparation
- OSP coating detection possible on Cu with rough surface condition
- Auto-focusing function
- 3D contour result



ST4080 is a device for measuring the OSP thickness on a Cu substrate of PCB/PWB. It measures the OSP thickness by analyzing the spectral interference of the reflected lights between the film surface and the substrate surface. The ST4080 system, which is a spectroscopic reflectometry that uses the non-destructive optical metrology, provides on a real-time detection basis, the average thickness and detailed 3D surface profile information.

Without any sample preparation, ST4080 is able to measure with the real-pattern on PCB substrate, thanks to the small measurement spot and the auto focusing function. With the installation of the M5X and M50X optical lens, you can extract information regarding the minute pattern and the detailed thickness profile respectively, of the region you wish to measure. Furthermore, simultaneous multi-spot measurement and measurement result display function of the contour form make ST4080 a better choice than the other systems.

Measurement Principle



$$R_{\lambda} = f(n_{\lambda}, k_{\lambda}, t_{\lambda})$$

n : Refractive index
k : Extinction coefficient
t : Thickness

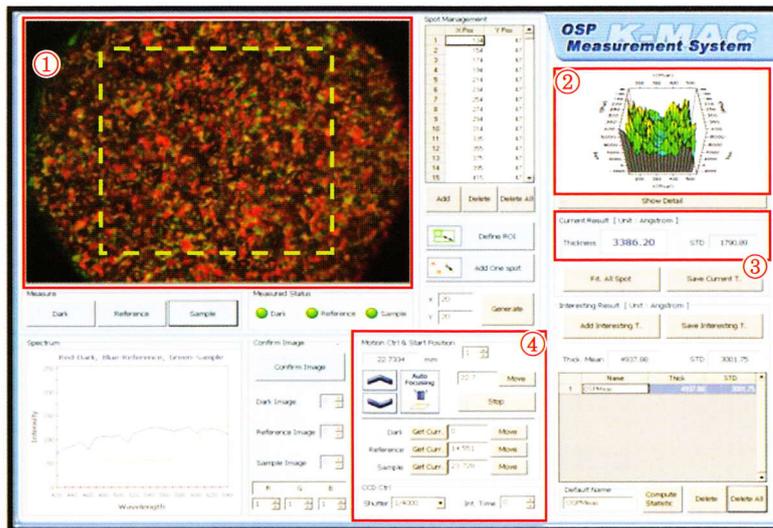
• Coherent Light

- Reflection from Surface + Reflection from Interfaces btw Films/Substrate = Interference Phenomenon
- Constructive/Destructive Interference dep. over Wavelengths

Why K-MAC ST4080?

- Use of more reliable measurement technology than UV-Vis spectrometer, Forced ion beam method, Sequential electrochemical reduction analysis and etc.
- Contactless & Non-destructive real-time measurement of OSP coating thickness on PCB/PWB using reflectometry
- Wide spectrum of 420nm to 640nm
- OSP thickness control possible through detailed data, average thickness and 3D surface morphology of multi-points

Operation Software



① CCD Display

Adjust the measurement area and points

② Result 3D Chart

Display the 3D image

③ Thickness result

Display the average thickness and STD

④ Measurement control

Adjust the height range and the brightness of CCD

Measurement Result

Thickness range

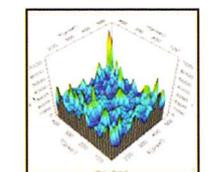
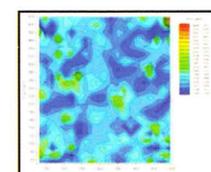
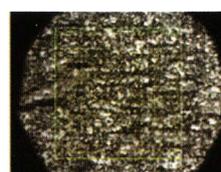
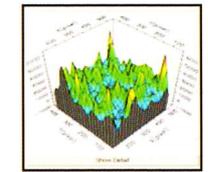
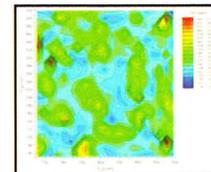
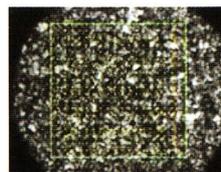
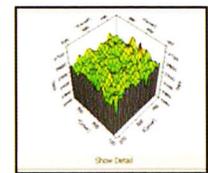
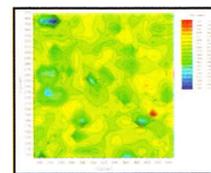
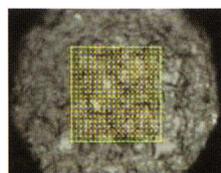
Thick

Thin

CCD

2D

3D



Specification

| | |
|---------------------------------------|--|
| Wavelength Range | 420nm~640nm |
| Thickness Measurement Range | 350Å~3μm (depends on samples) |
| Minimum Spot Size | 1.35μm, 0.135μm |
| Target Area | 864 x 648μm / 86.4 x 64.8μm |
| Lens Turret | M5X, M50X |
| # of Measurable Layer | 1 |
| Size of Sample Stage | 200mm x 200mm |
| Z-axis Repeatability | ± 1μm |
| Automatic Z Mechanism (Option) | Z direction Head Movement Travel range : 50mm Max. velocity : 50mm/s |
| Dimension | 500mm(W) X 610mm(L) X 640mm(H) |

Thickness Measurement for Thin Film



ST2000-DLXn



ST5030-SL



ST5000

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