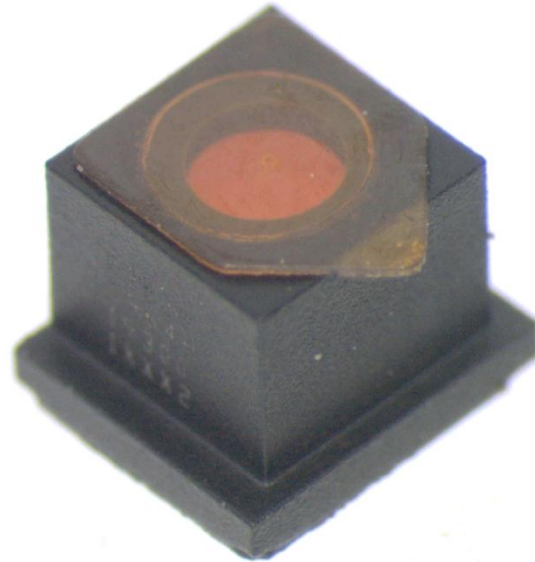


# Reverse Costing analysis



## Omnivision OVM7692 Camera Module VGA CameraCubeChip™ ShellCase WLP + WL-Optic

December 2011 - Version 1

Written by: Romain FRAUX

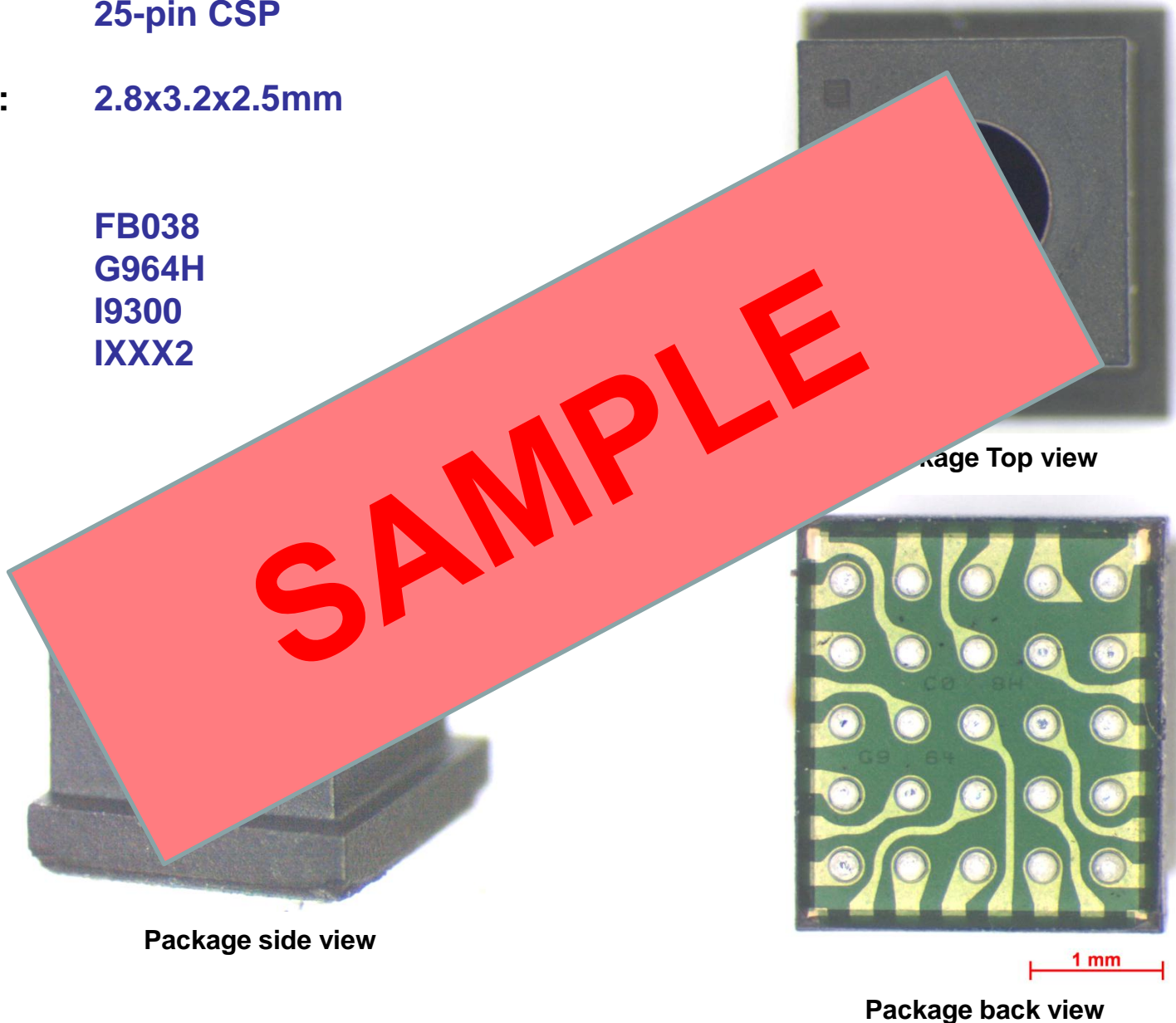
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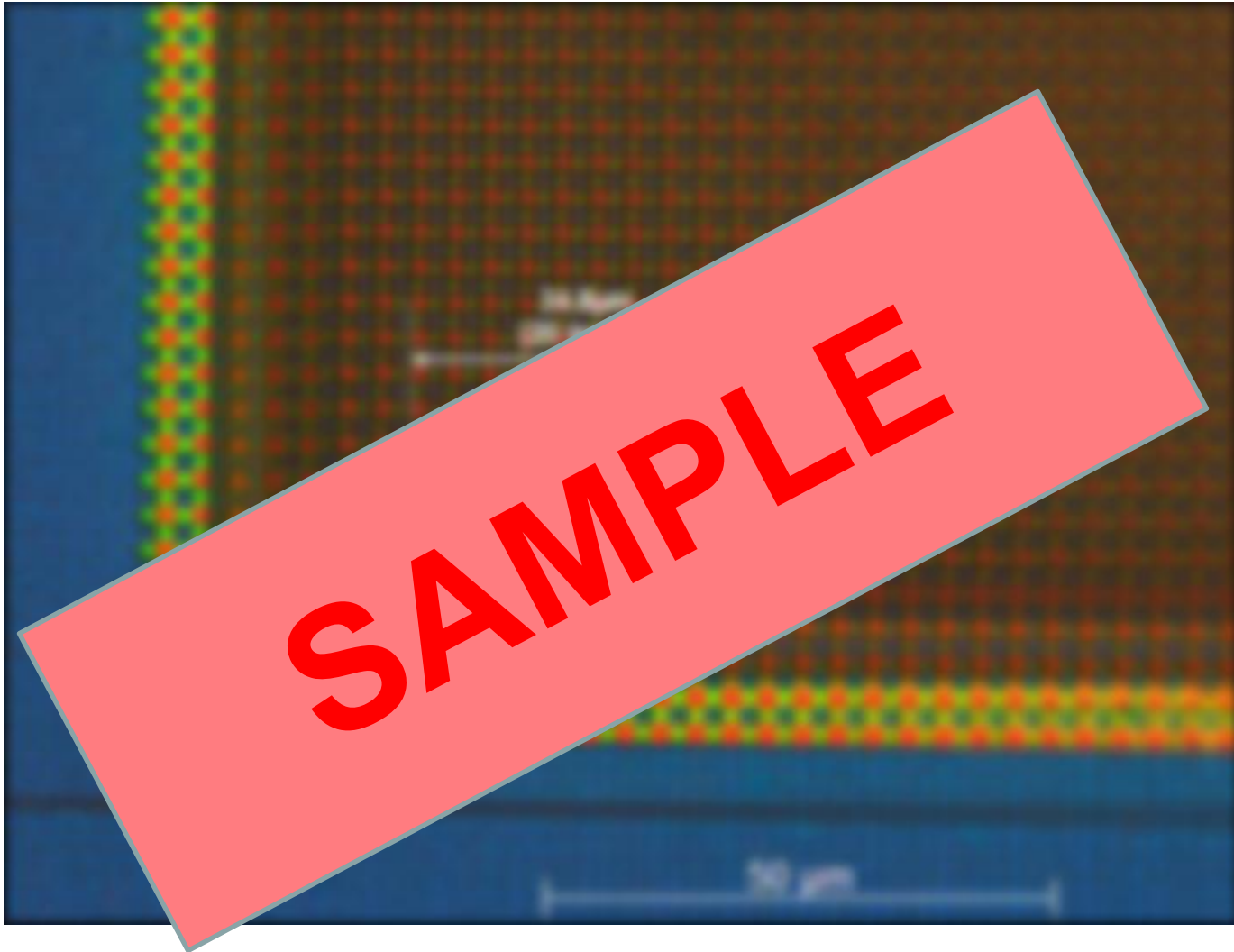
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- Package is analyzed and measured.
  - X-ray pictures are used to identify the package construction and the redistribution.
- Package is opened in order to identify the elements constituting it.
- Cross-section are realized to get overall package data : dimension and characteristics.
- An analysis of the technologies and of the materials used is performed.



- **Package:** 25-pin CSP
- **Dimensions:** 2.8x3.2x2.5mm
- **Marking:**  
FB038  
G964H  
I9300  
IXXX2





**Microlenses – Optical view**



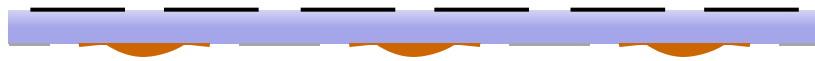
**Camera module cross-section – SEM view**



→ IR filter wafer



→ Lens wafer



→ Spacer wafer



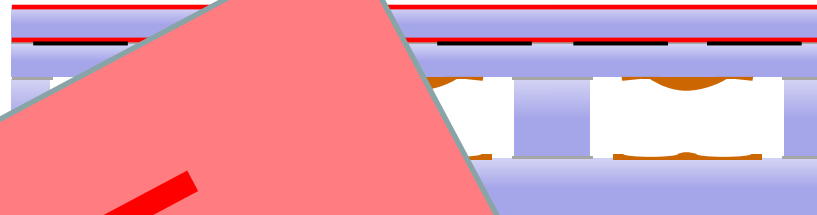
→ Lens wafer



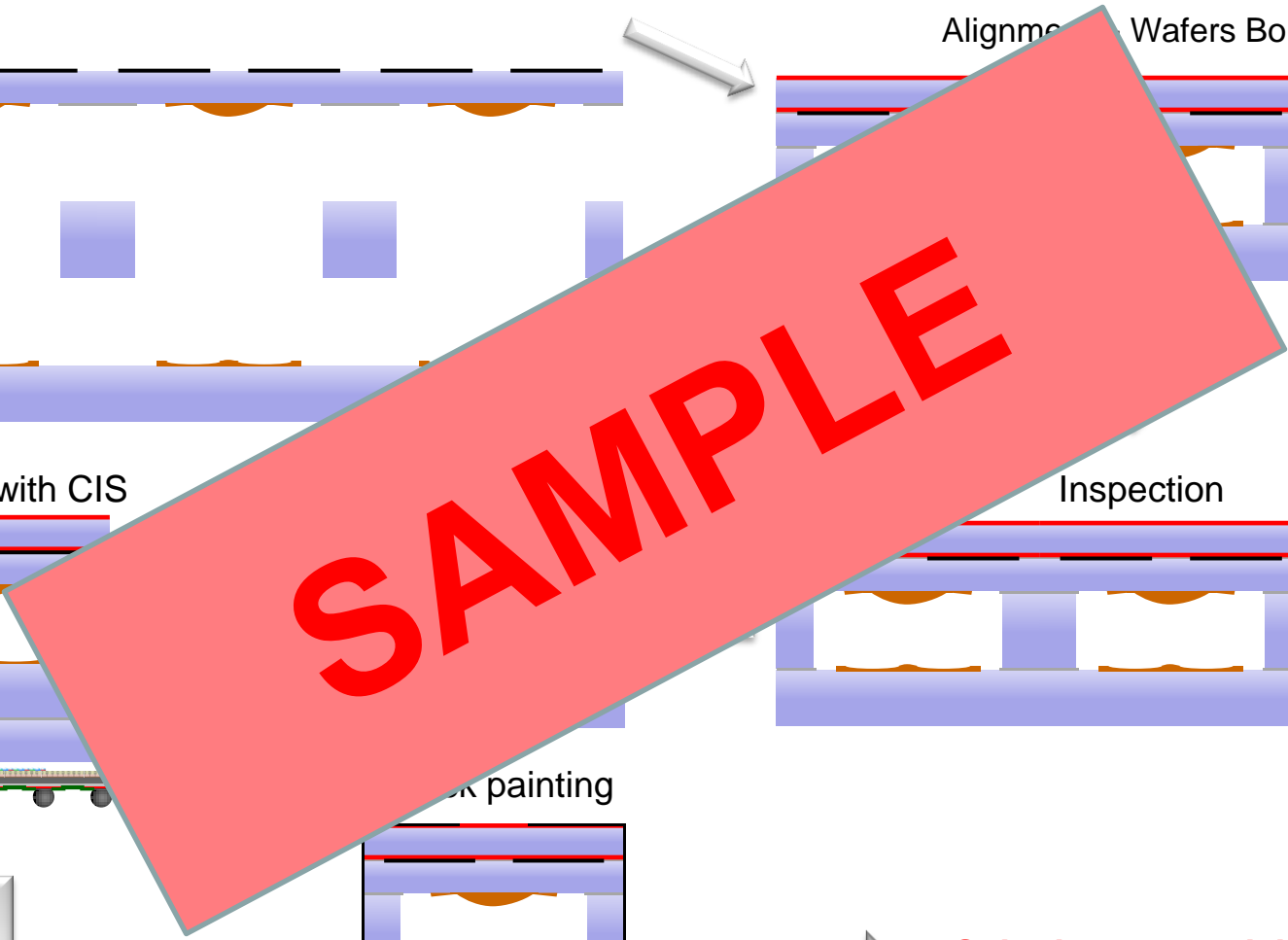
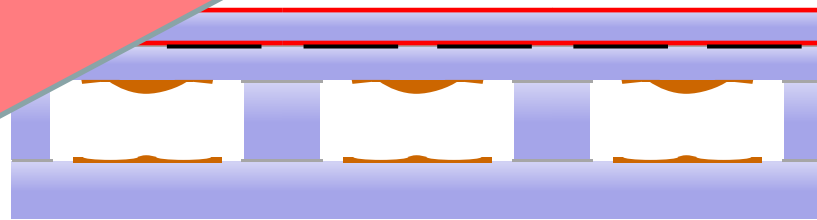
Assembly with CIS



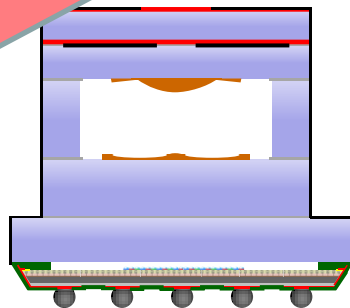
Alignment Wafers Bonding



Inspection



Mask painting



**Shipping to Omnivision for final test**

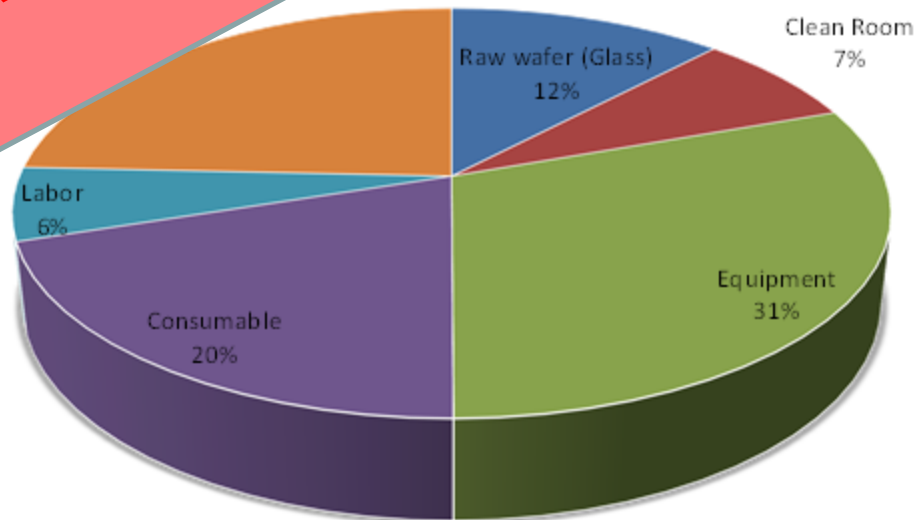
CIS WLP	Low Yield		Medium Yield		High Yield	
	Cost	Breakdown	Cost	Breakdown	Cost	Breakdown
Raw wafer (Glass)						
Clean Room						
Equipment						
Consumable						
Labor						
Yield losses						
<b>CIS WLP Cost</b>						
Xintec Overhead						
<b>CIS WLP Price</b>						

BE 0 : WLP Manufacturing yield



Breakdown (Medium Yield)

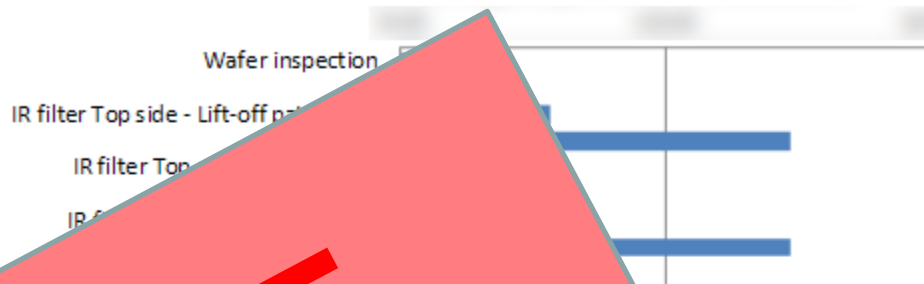
- The wafer-level price ranges from [blurred] variations.
- The main part of the cost is for equipment with 31%.
- By adding the overhead of Xintec, the WLP price ranges from [blurred] according to yield variations.





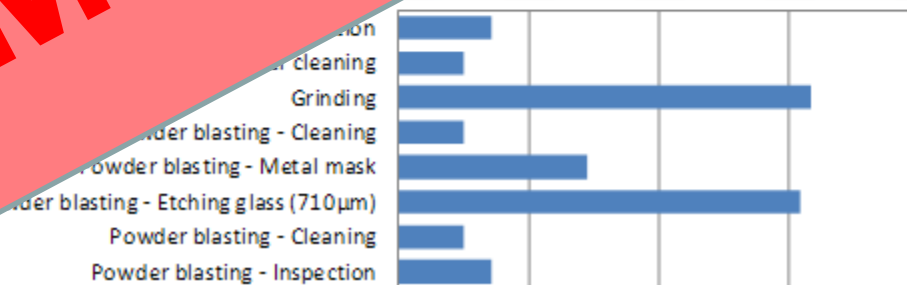
IR Filter wafer steps	Cost	
Wafer inspection		
Wafer cleaning		
IR filter Top side - Lift-off patterning		
IR filter Top side - Multilayer deposition (SiO2/Nb2O5)		
IR filter Top side - PR Removal		
IR filter Top side - Inspection		
IR filter Bottom side - Cleaning		
IR filter Bottom side - Multilayer deposition (SiO2/Nb2O5)		
IR filter Bottom side - Inspection		
<b>TOTAL</b>		

**IR Filter wafer Manufacturing Steps Cost Breakdown**



Spacer wafer steps
Wafer inspection
Wafer cleaning
Grinding
Powder blasting - Cleaning
Powder blasting - Metal mask
Powder blasting - Etching glass
Powder blasting - Cleaning
Powder blasting - Inspection

**Spacer wafer Manufacturing Steps Cost Breakdown**



**SAMPLE**