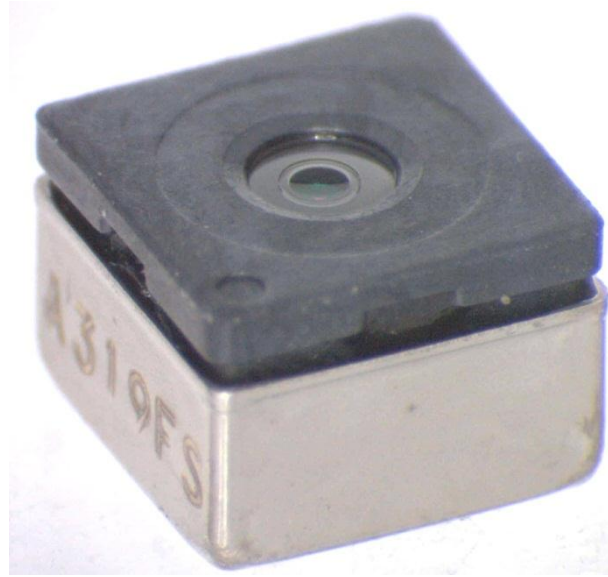


Reverse Costing analysis



Nokia 2330 Camera Module Toshiba VGA CIS WLP Anteryon WL-Optic

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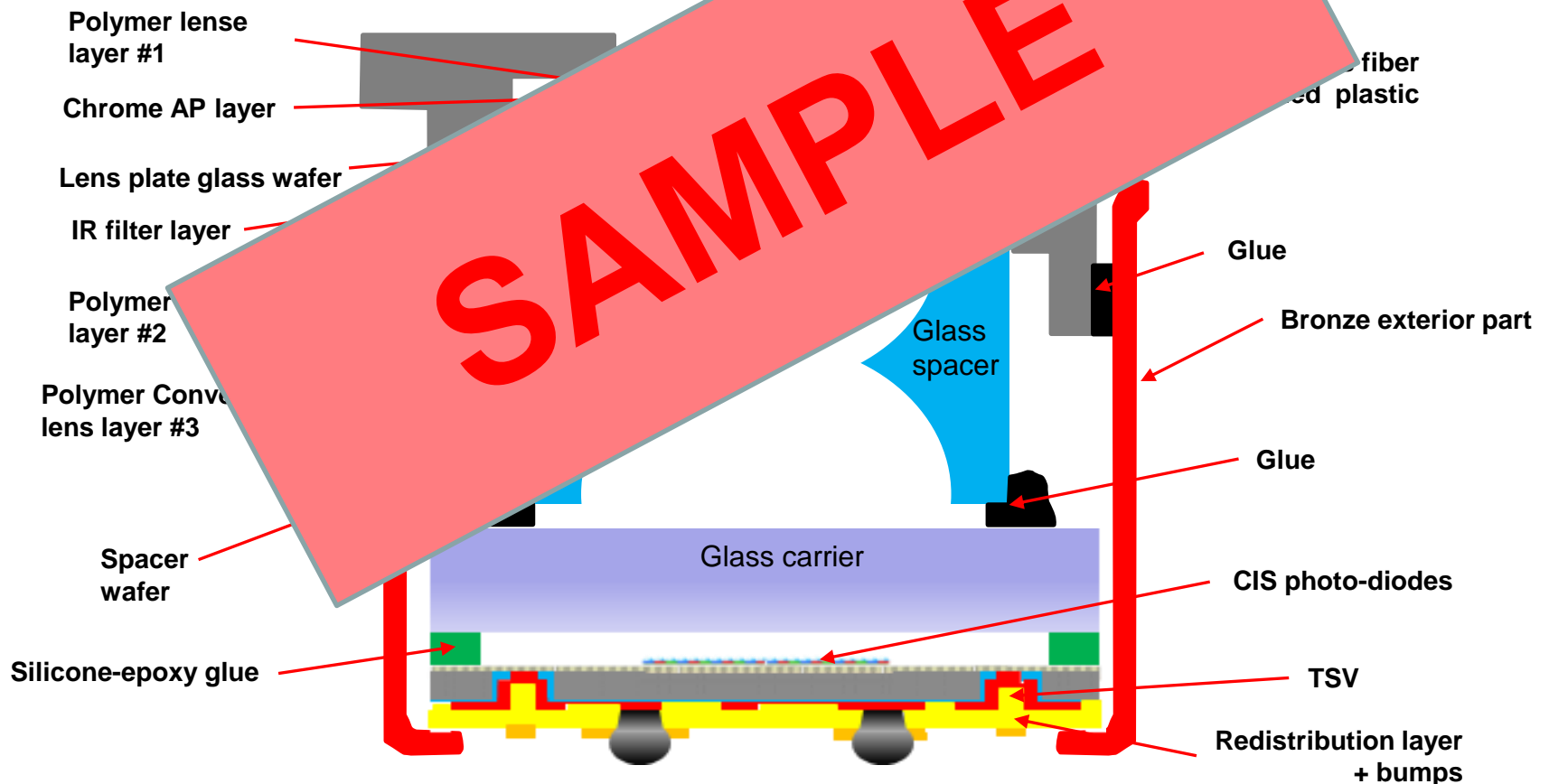
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- Definition of Prices
- Manufacturer Financial Ratios
- Camera Module estimated Manufacturer Price

- Package is analyzed and measured.
 - X-ray pictures are used to identify the package construction and the redistribution.
- One cross-section is realized to get overall package data : dimensions and characteristics.
- An analysis of the technologies and of the materials used is performed.

The schematic diagram below is constructed from observations from the study and presented in the next slides.







SEM tilted view:

Optical view: microlenses

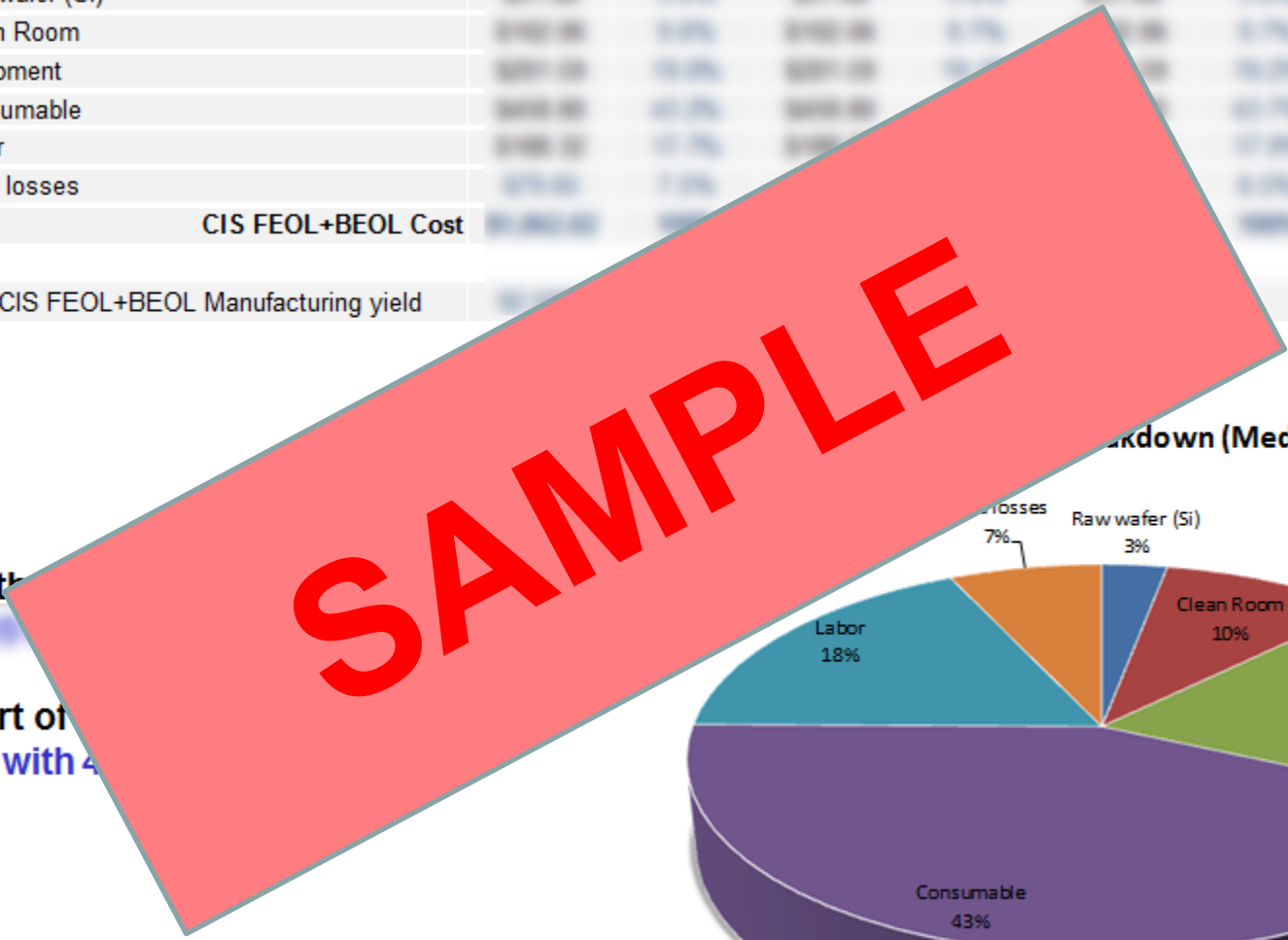


Camera module cross-section – SEM view

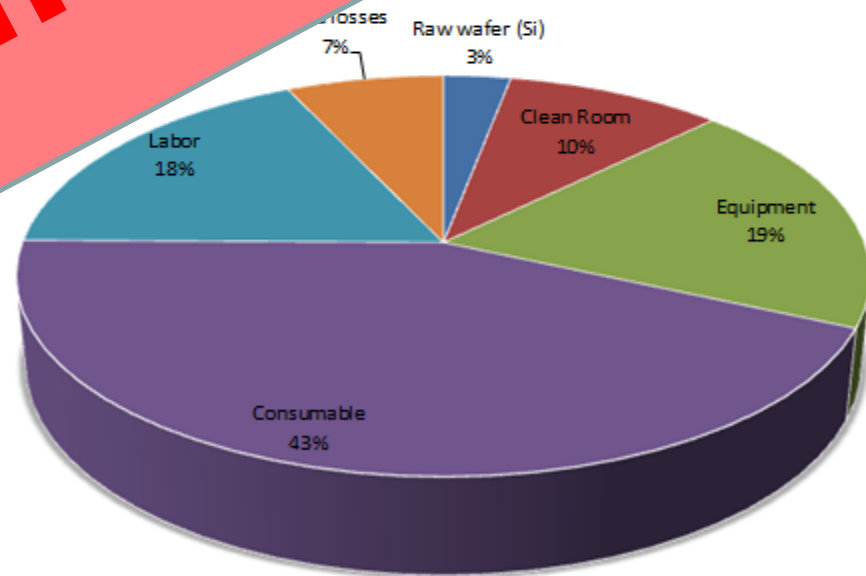




| FEOL+BEOL | Low Yield | | Medium Yield | | High Yield | |
|--|-----------|-----------|--------------|-----------|------------|-----------|
| | Cost | Breakdown | Cost | Breakdown | Cost | Breakdown |
| Raw wafer (Si) | | | | | | |
| Clean Room | | | | | | |
| Equipment | | | | | | |
| Consumable | | | | | | |
| Labor | | | | | | |
| Yield losses | | | | | | |
| CIS FEOL+BEOL Cost | | | | | | |
| FE : CIS FEOL+BEOL Manufacturing yield | | | | | | |



Breakdown (Medium Yield)



- The cost of the consumables with 43%
- The main part of the cost is consumables with 43%

