

# Zero-Cost Specialized Measuring Tool for Wirebond IMC

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**Abstract**—This paper presents a specialized measurement grid tool for wirebond intermetallic coverage (IMC), with zero-cost implementation.

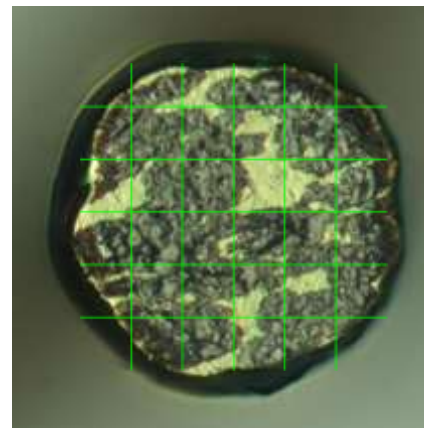
**Keywords**— IMC; intermetallic coverage; wirebond; grid tool.

## I. PROJECT OBJECTIVE

- Provide specialized measurement tool for quantifying or measuring wirebond intermetallic coverage (IMC) and other IMC-related anomalies, for New Product Introduction (NPI) and Assembly Process Control
- Zero-cost implementation by utilizing existing software licenses and available resources
  - Instead of purchasing brand-new measurement equipment or software measurement tool, one great challenge is to come up with an innovative and cost-effective solution by maximizing existing/available resources

## II. PROBLEM IDENTIFICATION – WIREBOND IMC WITH VISUAL MEASUREMENT

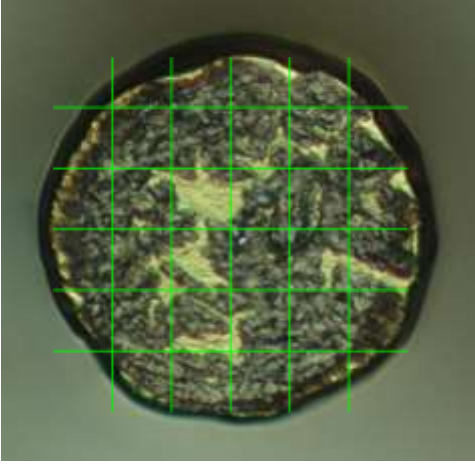
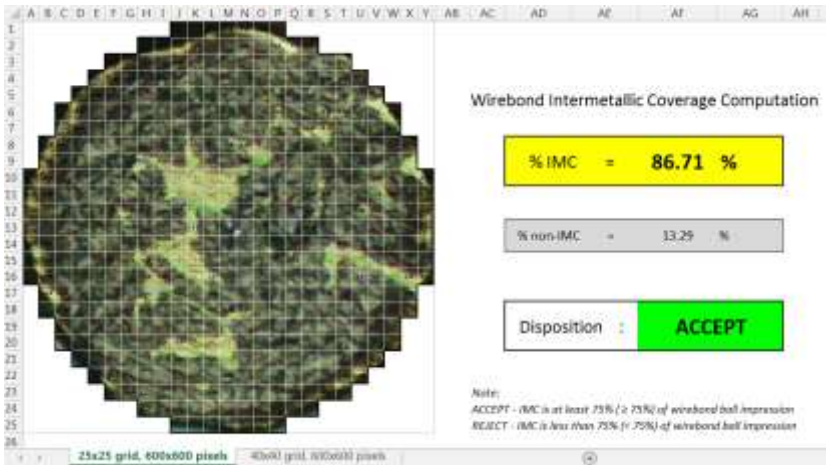
- Previous methodology utilized manual grids to measure or estimate the magnitude of the IMC



**IMC for Gold wire:**  
 Accept if  $\geq 75\%$   
 Reject if  $< 75\%$

Fig. 1. Example of Gold (Au) wire ball impression.

## III. SOLUTION IMPLEMENTATION

BEFORE	AFTER
<p><b>Manual Grid</b></p> 	<p><b>Wirebond IMC Measurement Tool</b></p> 
<p><b>Loss:</b> Low accuracy. Measurement is subjective, and through visual estimation.</p>	<p><b>Gain:</b> Measurement is still subjective but with better accuracy. The tool calculates real-time while pin-pointing the non-IMC part (light-colored). You can also choose to pin-point the dark-colored part.</p>
<p><b>Result:</b> IMC (dark-colored) covered a total of 30 grid boxes out of 36. Hence, measured % IMC is estimated at 83.33%.</p>	<p><b>Result:</b> % IMC is at 86.71%. The measured value is of better accuracy and credibility than the visual manual grid estimation.</p>