



SWTEST

PROBE TODAY, FOR TOMORROW

2022 CONFERENCE

3D IC Probe Card Solutions



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June 5 - 8, 2022

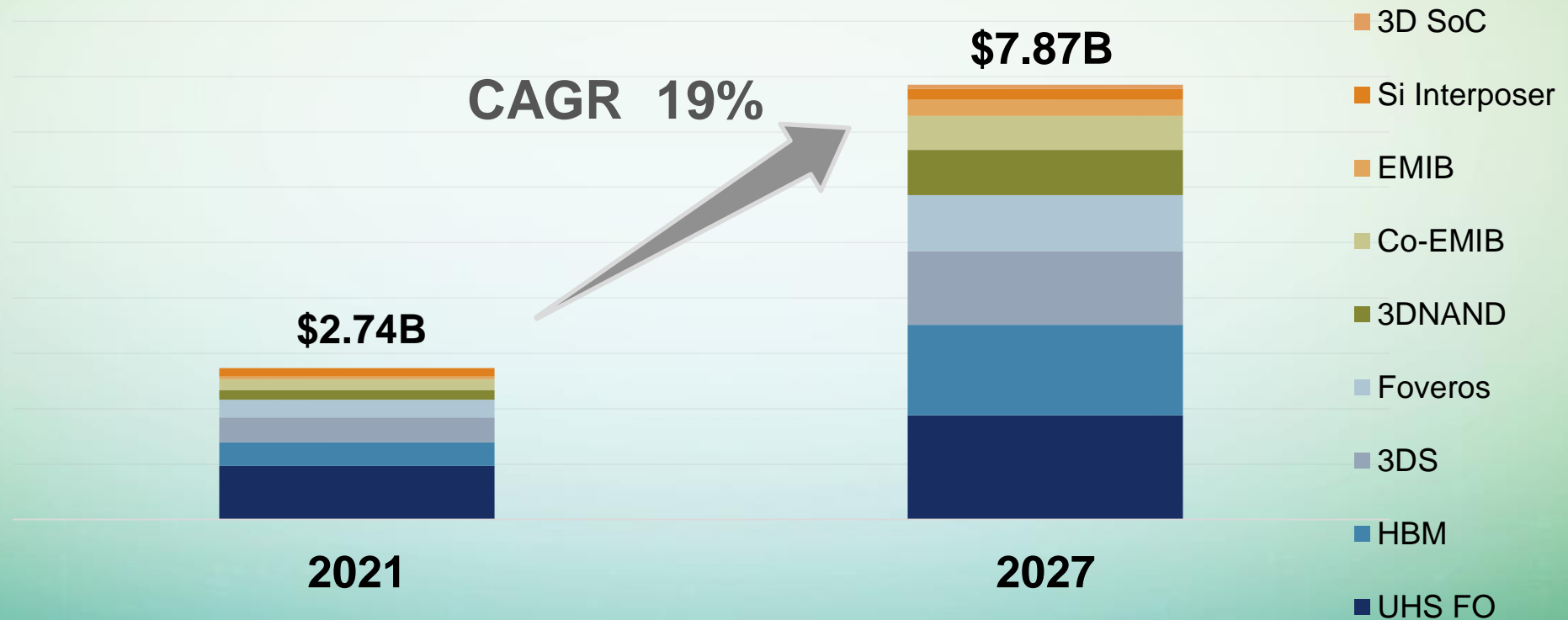
Outline

- **Trends and Challenges of IC Packaging & Testing**
- **Heterogeneous Integration Probe Card (HIPC) for 3D IC Test**
- **CHPT's HIPC Solutions**
- **Summary**
- **Follow-On Work**

Trends and Challenges of IC Packaging & Testing

- **2021-2027 High-End Packaging Market**

The high-end packaging market size is expected to reach \$7.87B by 2027, rising at a market growth of 18.6% CAGR.



Source: Yole (2022) 、CHPT

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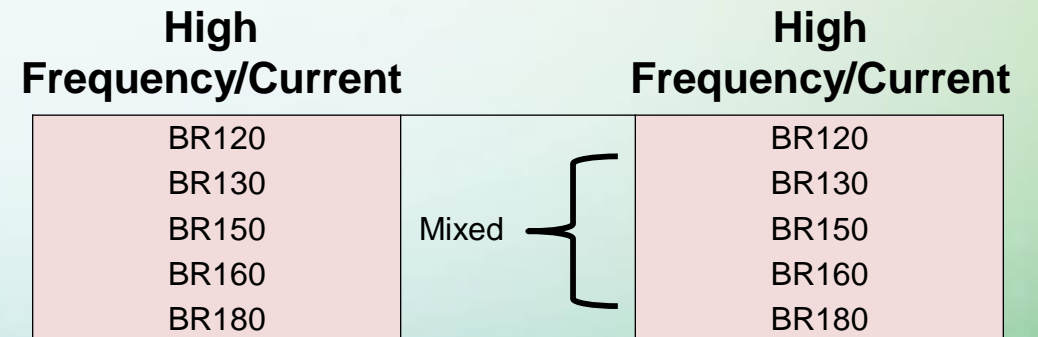
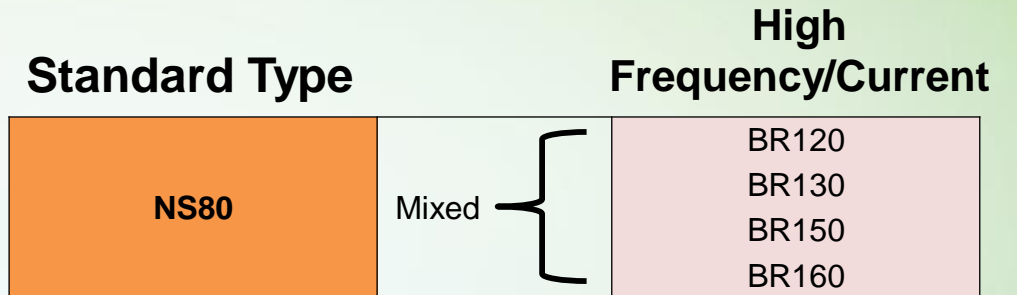
HIPC for 3D IC Test

- **CHPT HIPC Provides High Speed Testing Solutions for Wafer Sorting**
 - **Structural Optimization:** How to reinforce probe needle, probe needle profile and guide plate through mechanical simulation?
 - **Contact Force Control:** How to optimize probe pin's characteristics? 2 different diameter probe needles offer the same contact force to meet probe mark spec.
 - **Bandwidth Improvement:** Bandwidth is the fundamental factor for successful high speed testing. How do we achieve desired bandwidth based on different bump/pad pattern?

HIPC Solutions: Mixed Needle

- CHPT's HIPC Solutions Can Work Stably in Bandwidth Testing Projects

Specification	BR Series	NS Series
Applicable Pitch (um)	110~180	50~100
Contact Force (@ 4mils O.D.)(g)	2.0~4.3	1.5~4.0
Current Carrying Capability (mA) (ISMI 2009)	1,800~2,400	500~1,200
Temperature (°C)	-40~150	-40~150



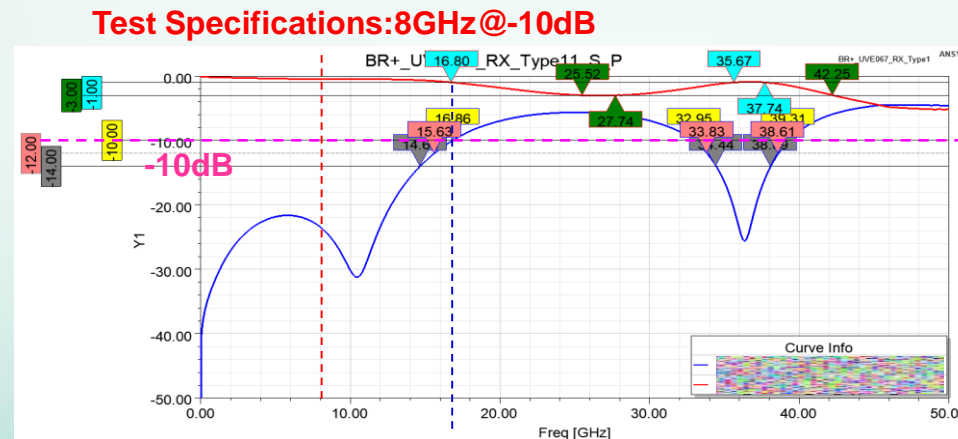
HIPC Solutions: Case Study

- Mixed Needle Design Practical Case Sharing

Needle Arrangement



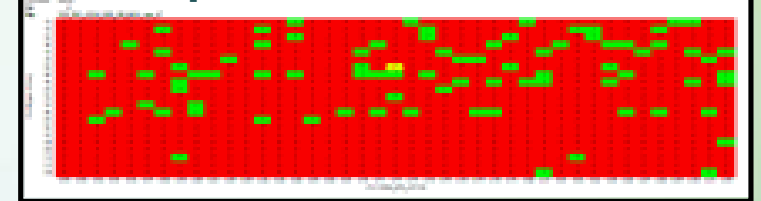
Spec. Requirements vs. Electrical Simulation Results



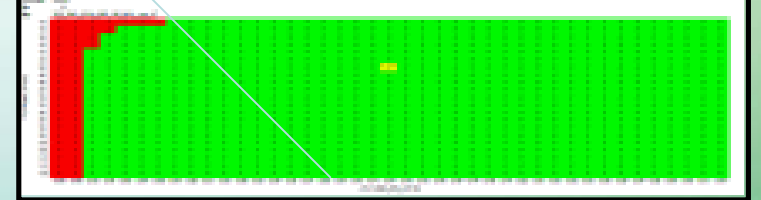
Simulation results: 16.8GHz @ -10dB

Electrical Diagram : Shmoo

Non-Optimized Needle : Fail



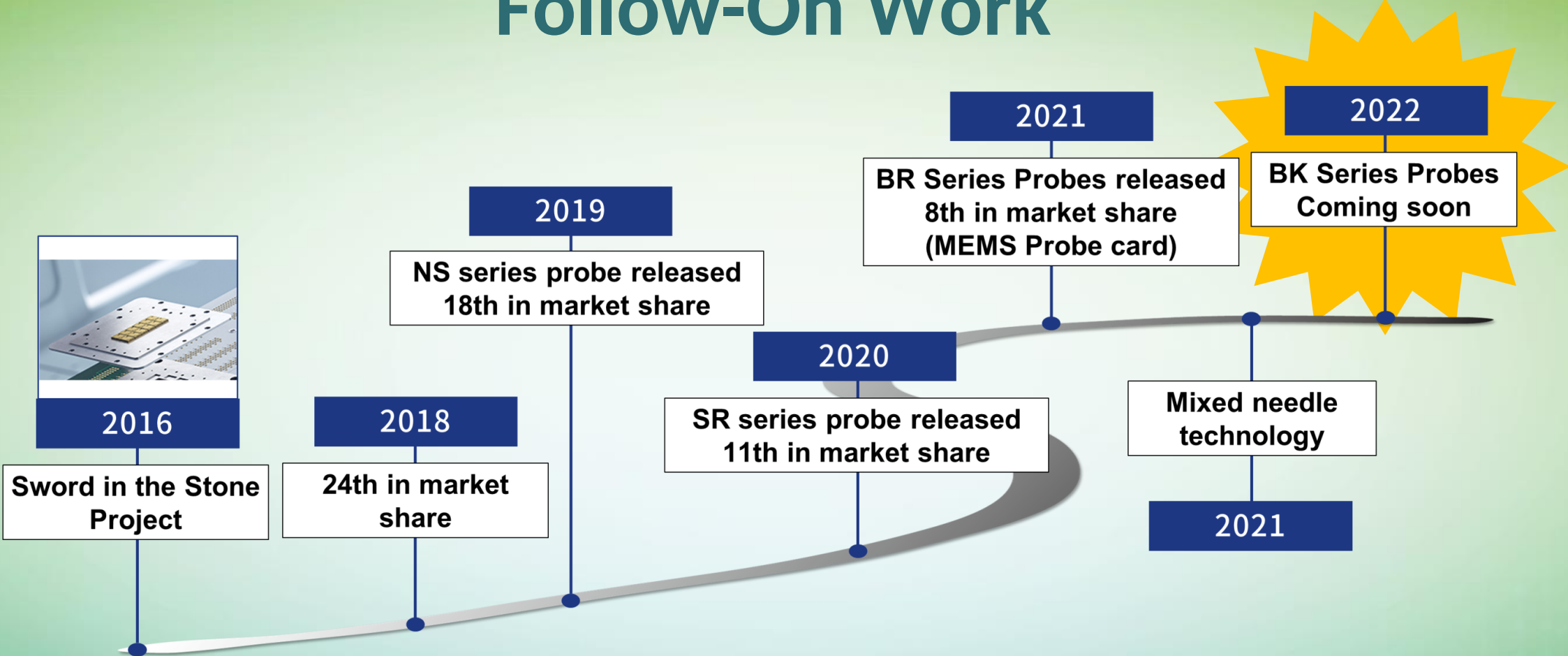
HIPC Solution : Pass



Summary

- **Semiconductor 3D IC market growth at 18.6% CAGR.**
- **Advanced packaging technology highlights the importance of HIPC.**
- **Our product from PCB, interposer to probe head are AI optimized with smart manufacturing.**
- **CHPT's high-quality HIPC solution meets the requirements of high pin count, high current and optimized bandwidth at the different pitches.**

Follow-On Work



BK series needles have better CCC and excellent bandwidth characteristics. The single-pin CCC can reach 2.5A and the bandwidth can reach more than 28GHz under proper arrangement.