

Earnings Call September 1, 2022

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Overview - Microelectronics Reliability Testing

- Test and analysis of various mechanisms, which cause degradation and potential failures in semiconductor chips.
- Tests are performed on dedicated 'DUTs' (Devices Under Test)
- Test equipment (systems) controls temperature (up to 350° C), and uses current / voltage stimuli to accelerate degradation (from years - under normal operation - to hours, days, weeks).
- Testing performed using either 'PLR' (<u>Package Level Reliability</u>) or 'WLR' (<u>Wafer Level Reliability</u>)
- Test systems include many accurate current / voltage sources, high-accuracy data acquisition units, temperature-chambers, and complex control & data-analysis software.



<u>MIRA</u>: Cost effective Electromigration & Stress-migration

Infinity: High performance and versatility (HCD, TDDB,...)

ACE: Pulsed (AC) applications

<u>Probers</u>: Multi-site, Semi-auto for <u>Wafer - Level - Reliability</u>

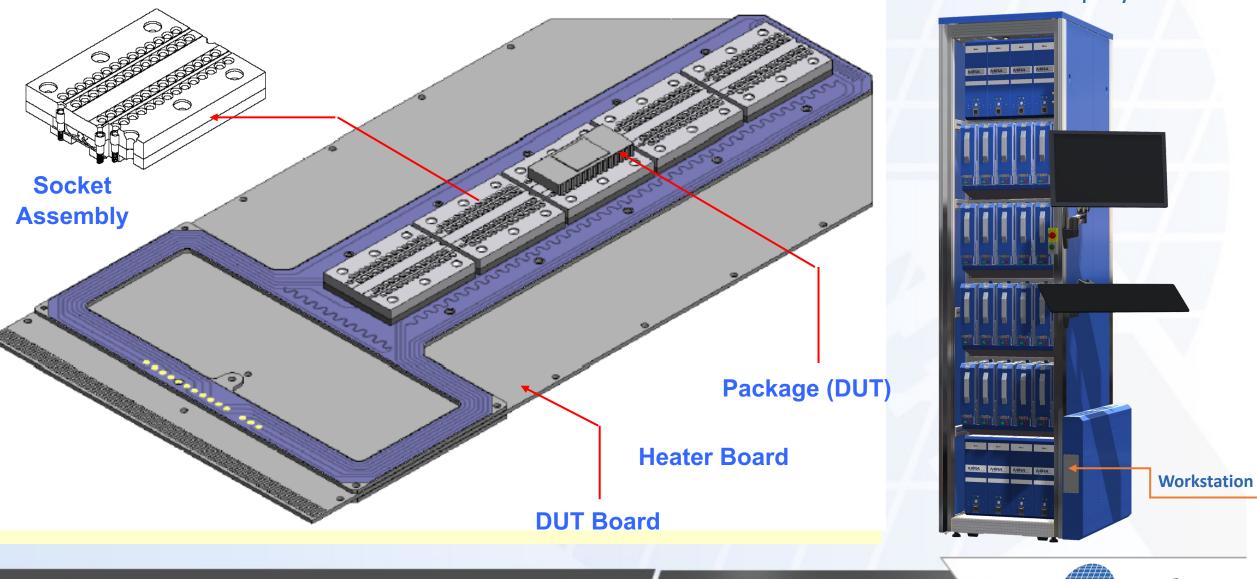
Accessories: Ovens, DUT Boards, Sockets, and Coolers.

<u>Note</u>: The following examples present one specific product / application per product family.



Mira-Package level Reliability

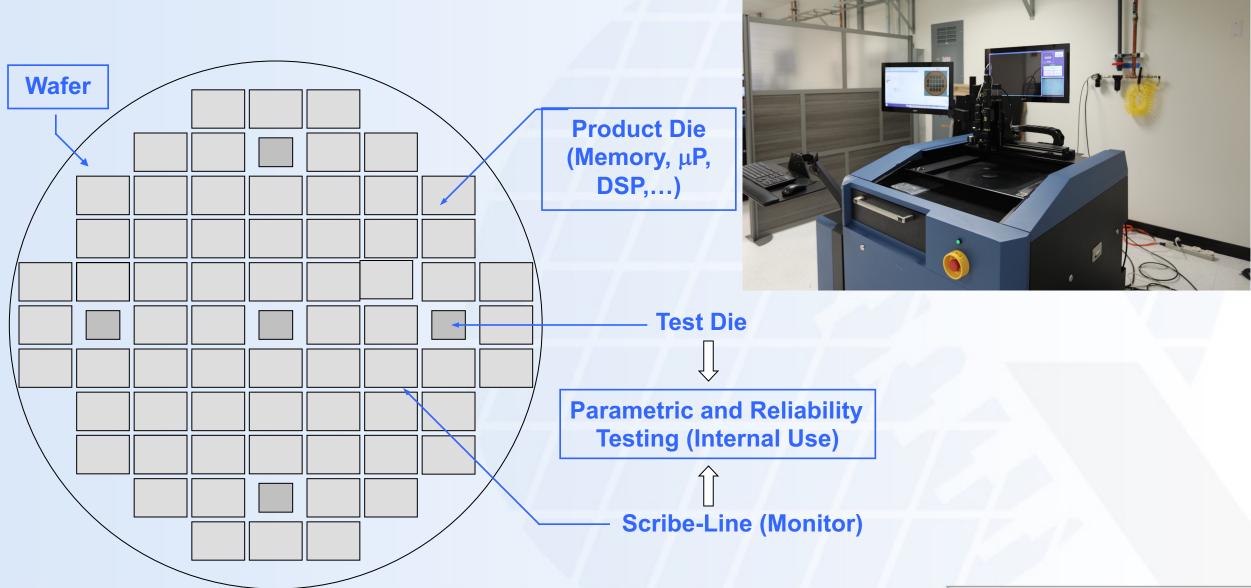
Mira Micro Oven System 480 DUT Capacity



Infinity – Package level Reliability

Test Type	Device Being Tested and Failure Mode	End Product	Infinity Package Level System
TDDB	Gate dielectrics of transistors or inter/intra- layer dielectrics insulating the interconnects of ICs. Failure is a destructive breakdown of the dielectric, causing a short circuit.	Nearly all electronic devices	SMUs
HCI	MOSFET and bipolar junction transistors used for integrated circuits and discrete devices. A gradual degradation of parameters is expected, impacting performance and operation of the device.	Nearly all electronic devices	Ovens
BTI	MOSFET devices, often PMOS devices subject to NBTI (Negative Bias Temperature Instability) stress. Gradual degradation is expected with both temporary and permanent components to the degradation.	Nearly all electronic devices	
HTRB	MOSFET devices, often WBG devices like Gallium Nitride (GaN) and Silicon Carbide (SiC) used for high voltage and high frequency transistors. Failure is observed as gradual degradation of transistor parameters.	Electric Vehicles, Radar, Wireless Communication and Extreme Environments among many others.	Workstation
	Testing the Future		JualiTau

Wafer level Reliability (WLR)





ACE SYSTEM

Electromigration effects on interconnects used under AC conditions have typically been approximated using "corrected" results from DC electromigration testing. However, the ever-increasing miniaturization of components and the need to question the traditional DC to AC correction factors have produced a growing demand for advanced testing tools and techniques that more closely simulate "real-world" degradation of interconnects used under AC conditions. To meet this demand, QualiTau has developed the ACE, an innovative pulsed electromigration system.



Complementary Business Activity

- Customer support
 - Service contracts
 - Ongoing service (by request)
- Testing services at QualiTau (US facility)
- Application support
- Consumables & Accessories
- Patent & Intellectual property
 - 29 US patents (several International)



~ 1400 SYSTEMS INSTALLED WORLD WIDE



PARTIAL CUSTOMER LIST



PROFIT & LOSS – SUMMARY (Thousands of \$US)

	H1/22	H1/21	2021
Total Revenues	17,521	11,114	29,048
Total Cost		7,847	23,463
Gross Income	11,663	6,952	17,890
Operating Income	5,928	3,267	7,138
Income Before Tax	5,634	3,157	6,927



STATEMENT OF INCOME

	<u>H1-2022</u> <u>%</u>	<u>H1-2021 %</u>	<u>Y-2021 %</u>
REVENUES	17,521 ¹⁰⁰	11,114 ¹⁰⁰	29,048 ¹⁰⁰
COST OF SALES	5,858	4,162	11,158
GROSS PROFIT	11,663 ^{66.6}	6,952 62.6	17,890 ^{61.6}
RESEARCH & DEVELOPMENT	2,141 ^{12.2}	2,224 20.0	4,901 16.9
SALES & MARKETING	1,597 ^{9.1}	1,169 ^{10.5}	3,082 10.6
GENERAL & ADMINISTRATION	2,006 ^{11.4}	1,634 ^{14.7}	4,111 ^{14.1}
OTHER EXPENSES (INCOME)	(9)	(1,342)	(1,342)
OPERATING INCOME (LOSS)	5,928 33.8	3,267 29.4	7,138 24.6
EBITDA	5,822 33.2	3, 459 31.1	7,317 25.2
FINANCE INCOME (EXPENSE)	(294)	(110)	
TAX EXPENSES (INCOME)	1,343	(308)	501
EQUITY GAIN (LOSS)			
NET INCOME (LOSS)	4,291 <i>26.5</i>	3,465 31.2	6,426 22.1
EARNING (LOSS) PER SHARE	0.998	0.814	1.507
DILUTED EARNINGS PER SHARE	0.941	0.736	1.443



CASH FLOW H1-2022, H1-2021, Y-2021

	<u>30.6.2022</u>	<u>30.6.2021</u>	<u>Y-2021</u>
NET INCOME (LOSS)	4,291	3,465	6,426
ADJUSTMENTS FOR RECONCILIATION	(4,087)	(2,426)	(566)
CASH FLOW FROM (TO) OPERATION ACTIVITIES	204	1,039	5,860
CASH FLOW FROM (TO) INVESTMENT ACTIVITIES	(5)	(6)	(32)
CASH FLOW FROM (TO) FINANCING ACTIVITIES	(2,230)	(1,806)	(3,519)
INCREASE (DECREASE) IN CASH	(2,031)	(773)	2,309
CASH AT THE BEGINNING OF THE PERIOD	11,855	9,546	9,546
CASH AT THE END OF THE PERIOD	9,824	8,773	11,855



BALANCE SHEET (Thousands of \$US)

	<u>30.6.2022</u>	<u>%</u>	<u>30.6.2021</u>	<u>%</u>	<u>31.12.2021</u>	<u>%</u>
CURRENT ASSETS LONG TERM INVESTMENTS	29,434 145	92.1	22,765 150	86.8	26,815 149	90.2
FIXED ASSETS	776		972		922	
OPERATING LEASE RIGHT	794		1,335		1,057	
TAX ASSETS	800		1,000		800	
TOTAL	31,949	-	26,222		29,743	-
CURRENT LIABILITIES	5,492	17.2	3,668	14.0	5,583	18.8
LONG TERM LIABILITIES	364		931		652	
SHAREHOLDERS EQUITY	26,093	82.0	21,623	82.5	23,508	79.0
TOTAL	31,949		26,222		29,743	

