



# **FTR** THE FINAL TEST REPORT

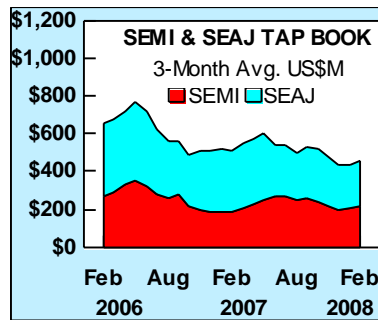


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## Troubled DRAM Industry Hit With Yet Another Loss!

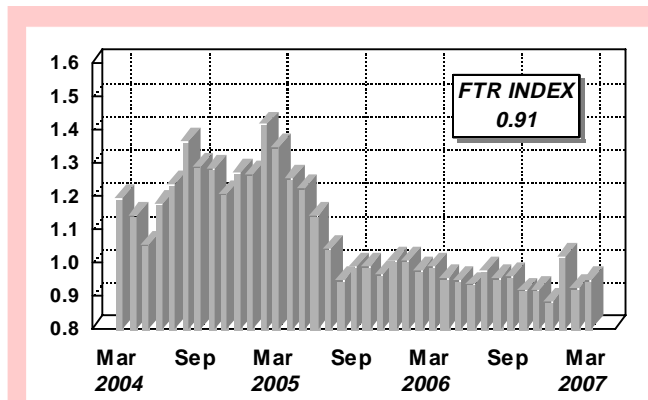
**L**ate last month the DRAM making business was dealt another blow - one it really does not need. As has been widely discussed, here and elsewhere, DRAM makers are struggling to sell their products for more than they cost to make - and most are not succeeding. As a result, they have begun to cut their CAPEX spending, creating a measurable slowdown in the sales of both Front-end and Back-end chip equipment. Last month SEMI reported that its three-month average of chip equipment bookings by North American-based vendors was down 12.1 percent from the same month last year. The SEAJ said that the three-month average of orders to Japan-based equipment vendors fell by 42.5 percent from the same period in 2007.



For the first half of its fiscal 2007 - ended September - its orders were 95.2 billion yen, already down 17.4 percent YoY. As the graph at left shows, SEMI and SEAJ reported combined bookings for Test, Assembly and Packaging (TAP) equipment have fallen about 41 percent since peaking for this cycle in May 2006.

Now the global DRAM making industry is facing the possibility of having to absorb a royalty fee on every chip the sell - and potentially every DRAM chip they have shipped since as far back as the year 2000.

Continued on page 2



FTR's index of ATE, chipmakers, and PC makers vs. the Dow-30, rose slightly in March as investors looked at depressed chip-related stocks.

Advantest, the dominant supplier of memory-chip testers, is expected to report this month that new orders fell by 37 percent sequentially to 60 billion yen (\$600 million) in the half year to March 31, according a report by Scott Foster, a Tokyo-based analyst at HSBC.

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Late last month a Federal Court jury in San Jose, CA, rejected claims by three memory-chip makers, Hynix, Micron Technology and Nanya Technology, that Rambus had deliberately misled the memory chip industry in the 1990s when new memory standards were being hammered out.

The lawsuit was originally filed in 2000, claiming that patents held by Rambus for key technologies now included in their chips should be ruled invalid. And thus, they should not have to pay royalties to Rambus.

The memory makers have said they were duped by Rambus to include the technological inventions in their memory chips during standards-setting body (JEDEC) sessions without telling members it planned to patent those technologies and charge royalties for their use. (Interestingly, the case was presided over by U.S. District Judge Ronald Whyte - who is also hearing the Verigy vs. STS 'Trade Secret' case (p.7 of this issue.)

The verdict surprised most observers as in a recent reexamination of a key Rambus patent, the U.S. Patent and Trademark Office (PTO) issued a preliminary rejection of all the claims. In a 2006 Federal Trade Commission decision held that Rambus "had deceived a standards-setting committee and created a monopoly in the memory chip industry. The FTC found Rambus deliberately withheld information from the *Joint Electron Device Engineering Council* (JEDEC) - an important engineering council which counted Rambus as a member - when the council was developing technical standards for all companies in the computer memory industry. The FTC found Rambus concealed information about which patents it had secured or knew it would be able to secure.

In February 2008, as part of its reexamination process, the PTO preliminarily rejected all of the claims of Rambus' U.S. patent 6,715,020, one of the patents Rambus has asserted against Micron and other memory manufacturers.

A group of other key Rambus patents are still pending reexamination by the PTO. Likewise, the European Patent Office (EPO) has revoked or substantially narrowed Rambus patents asserted against Micron in various European countries. As a result, Rambus' infringement claims have been dismissed in the United Kingdom, Germany and Italy.

However, on March 25, the U.S. Federal jury held there was "no anti-competitive behavior by Rambus in its activities with a memory chip industry standards body and that the company did not commit fraud in its attempt to protect its memory chip patents.

After the verdict was handed down, at the end of a 7-week trial, (the jury took just four hours to reach its verdict) Rambus VP/General Counsel Tom Lavelle said, "This was an important one for us, it marks a first step toward Rambus collecting royalties from memory chip makers." This ruling should put to rest a series of ongoing allegations Rambus has endured for many years, "Our business is to license our revolutionary technology to the industry for fair compensation. We are pleased to have this decision behind us as we continue to engage with the industry to deliver compelling products to the market."

"Obviously, our hope is to collect royalties instead of getting injunctions," said Lavelle. "But if Hynix continues to ship products that include unauthorized use of Rambus technologies, Rambus has little alternative, he said on a conference call with analysts."

"Rambus' victory is a first step toward the firm collecting royalties as much as \$11.7 billion because it gives the company leverage to pursue settlements with manufacturers, according to analyst Michael Cohen of Pacific American Securities. His estimate is based on settlements with all manufacturers on global sales at a running royalty rate of 4.25 percent on chips of the most recent memory types.

Although, Rambus had described the verdict as 'a first step' it publicly threatened the following day to file an injunction against Hynix Semiconductor to block the company from selling chips using its technologies.

The threat was based on a judgment for Rambus against Hynix in 2006 that resulted in a \$133 million award to Rambus. Judge Whyte gave the company until May 9 to file its injunction request, which would likely prevent Hynix from exporting memory products to the United States.. Lavelle said the latest decision "potentially clears the way for Rambus to collect on that verdict.

Some observers expect that at this point, that figure will go up substantially because Hynix has continued to ship products that the court had ruled infringe Rambus patents."

Kenneth Nissly, an attorney for Hynix, said the company would fight any such measure. "Any request for injunction would have to be based on this verdict, which is wrong and without factual basis," Nissly said. He added that Hynix still intends to dispute the earlier decision.

Micron also announced that it plans to fight the verdict. "I think they [the jurors] misapprehended what the standards-setting organizations are about and the absolute need for good faith," said Jared Bobrow, an attorney for Micron. Judge Whyte has set an April deadline for that motion.

Industry observers believe a final resolution will take at least several years - and that any prospect of a big payout to Rambus may take just as long. The showdown may not come until 2010 or 2011, after the appeals run their course, said Cohen, but that "depends on whether the memory manufacturers come to their senses that they are going to have to pay."

One critical next step in the litigation is a patent infringement trial tentatively scheduled for January 2009. That trial will examine whether Micron, Nanya, Hynix and Samsung have infringed Rambus patents on DDR2 technology - potentially expanding the case further.

## IN FTR'S OPINION

The lawsuit filed against one of its previous employees and the company that he founded based - fully admittedly on the work he did while he was employed at Verigy - is at the very least, interesting and in some ways curious. The judge's decision, which is detailed on p. 7 of this issue raises as many questions as it answers.



This suit was particularly interesting as the ATE industry has been notably free of litigation during most of its 50-year history. And, the litigation which has occurred has dealt in the main with patent infringement - not 'trade secrets' as is the basis of this case. "Trade Secret" suits have been rare, even though almost every senior ATE engineer or marketer has worked for at least two or more companies in this industry during his career. Arguably, many of the companies in the industry are the result of former employees starting a new company that competed, at least in part, with their previous employers. STS, which surfaced publicly last year, initially appeared to just be another such situation.

Patent infringement litigation - such as recent battles between Advantest, Mirae and TechWing over DUT handlers and FormFactor's suits against Korea's Phicom and Japan-based MJC over Advanced Probe Card designs - are relatively straight forward as the details of what is being contested is publicly described in great detail by the patent holder. Thus the similarities between the patented device and the 'infringing device' can be reasonably understood by the public as well as by judges or the 'experts' called by the judge or by either or both parties.

When most think of 'trade secrets', what probably comes to mind is the long-protected formula for creating the 'base' for making Coca-Cola.

In that case, the company has been able to protect its 'secret formula' by keeping only a very few people from having any real information about it. However, in the case of large ATE companies, what its engineering department is working on are generally well known, not just by the engineers but also by its executives, marketing and, often, sales people. Thus the word 'secret' is seldom applicable.

So, why did Verigy try to stop Mayder and his company Silicon Test Systems from bringing a device to market which it admits - according to the court record - "it is not currently using the trade secrets on which [Flash Enhancer] is based and it chose not enter the market with a product based on those secrets."

STS argues that Verigy has attempted to keep it from bringing the Flash Enhancer to market because "it will reduce the number of testers a customer needed to purchase from Verigy. Verigy refuses to comment on its reasons beyond a statement by Ken Siegel, its VP/General Counsel. He said. "Verigy takes its intellectual property rights very seriously, we are pleased with the court's decision.

Certainly, the advantages - and disadvantages - of using mechanical or solid-state switches' to 'fan-out' tester resources to use them to test more than a single device at time have been well known since the idea was first applied to DRAM test in the mid-1970s. However, some thirty-five years later there are still many problems with the actual application of what appears to be an apparently simple solution. They range from what happens when a drive or receive instrument is connected to a 'shorted' input or output of one of the multiple devices which it is attempting to test to the amount of 'overhead' required to deal with that and other problems such as 'logging' individual device failures when only one multiple DUTs connected fails a given test.

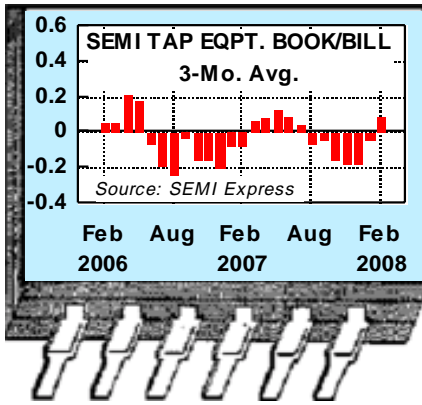
In the case of Verigy vs. STS, the Public Version of the court record is so heavily 'redacted' that how its solutions are dealt with by STS' Flash Enhancer product are impossible to evaluate. STS claims that its FLASH Enhancer chip has been accepted by both Intel and Spansion - Verigy's two major NOR FLASH customers - and they have placed orders for initial quantities of its Enhancer chip for NOR FLASH probe test. However, as Verigy was able to stop the actual shipments of any, it's not yet possible to obtain any real data on its potential success at those companies.

STS has also admitted that it has been unable to find a market for its product - as it is presently implemented - among the NAND FLASH makers, a potentially much larger market with many more devices being produced and even longer test times. NAND producers themselves have invested substantial amounts of time and money in developing their own methods of 'fanning out' tester resources - but most continue to use the 'resource per site' testers.

As things stand, we will have to wait until beyond August 1, 2008 when the present injunction - or longer if Verigy's motion asking for a 'permanent' injunction - against STS' to determine if FLASH Enhancer product is successful.

So, we are still left to wonder that if the Fleash Enhancer does effectively reduce the number of testers required, would Verigy be so cynical as to try to keep it off the market to protect its tester sales.? But, if it is not effective, why would Verigy invest so much effort to stop it.

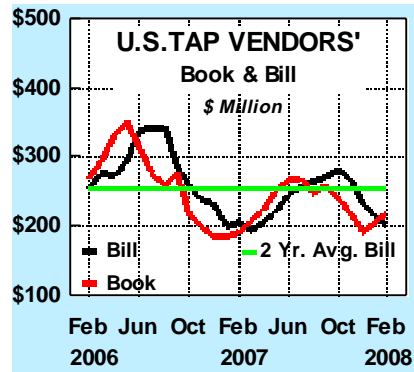
Possibly, Verigy has another approach in development which it believes to be more cost-effective that it intends to market in the near future. We would hope this is the case But, that's just my opinion.



### SEMI February TAP B/B at 1.09

SEMI said North American chip equipment suppliers reported \$1,228.9 million in bookings (three-month average basis) for February, were up 7.7 percent MoM, but were 12.1 percent lower than in February 2007. Total equipment billings were \$1,315.2 million up 2.8 percent MoM, but down 7.6 percent YoY. The resulting February book-to-bill ratio was 0.93.

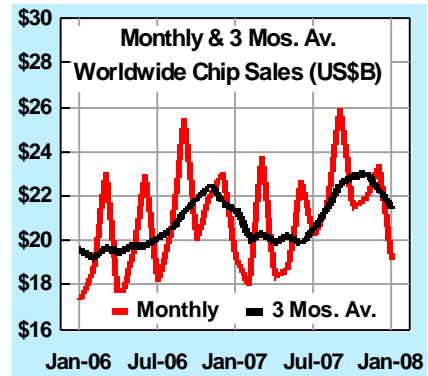
"North American chip equipment bookings and billings improved slightly in February, however they remain at levels below those reported last year," said Stanley Myers, president/CEO of SEMI, in a statement.



Front-end equipment bookings were \$1,008.2 million in February, up 7.9 percent MoM, but down 16.5 percent YoY. Billings were \$1,113.6 million, up 4.6 percent MoM, but down 8.6 percent YoY. The Front-end equipment book-to-bill was 0.91.

Test, assembly and packaging (TAP) equipment bookings were \$220.7 million in February up 6.9 percent MoM up 15.9 percent YoY. Billings were \$201.6 million, up 6.9 percent MoM, but down 1.7 percent YoY. The TAP B/B was 1.09.

TAP Book-to-Bill			
	Jan'08	Feb'08	Feb'07
Book	\$206.4	\$220.7	\$190.4
Bill	\$214.8	\$201.6	\$205.1
B/B	0.96	1.09	0.93



### Actual January Chip Sales Down YoY

Actual global chip sales in January 2008 of \$19.16 billion were down 0.7 percent YoY according to the WSTS. However, as the table below indicates most chip device type except memories (primarily DRAMs) showed YoY growth. Excluding DRAMs total chip revenues were up 8.4 percent YoY and IC revenues were up 8.7 percent.

January '08 Market Share			
Device	%Total Revenue	%Total Units	YoY ASP
ICs	83.7%	26.5%	-13.3%
Logic	34.4%	26.9%	0.4%
Analog	18.1%	47.5%	0.1%
MPU	13.0%	0.2%	-14.1%
DRAM	12.0%	9.1%	-60.9%
MCU	7.4%	7.3%	-5.7%
NAND	6.6%	2.1%	-4.6%
DSP	3.5%	1.0%	-4.3%
NOR	2.9%	2.1%	-23.1%
SRAM	0.9%	0.7%	-12.5%
Other	16.3%	73.4%	-1.9%
Sensors	2.1%	0.7%	14.4%
Opto	7.2%	12.5%	-16.1%
Discrete	6.9%	60.2%	-0.2%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>-10.9%</b>

Source: WSTS March 2008

### January 2008 WW Chip Sales

The SIA said that worldwide chip sales (3-month avg.) in January were \$21.5 billion, down 3.6 percent MoM and up just 0.03 percent from January 2007. "Virtually all product lines and geographic markets experienced slightly lower sales in January," said SIA president **George Scalise**. "Unit shipments of DRAMs and NAND FLASH grew modestly in January, however, a very competitive environment resulted in price pressures for these products which in turn led to continued erosion in average selling prices. Excluding memory products, chip sales were up by 8.1 percent YoY." Scalise continued, "The U.S. economy has entered a period of slower growth that may impact consumer purchases of electronic products. However, the emergence and growth of large consumer markets outside the U.S. have created new opportunities for chipmakers."

Market	MoM			YoY	
	Dec'07	Jan'08	Change	Jan'07	Change
Americas	\$3.65	\$3.45	-5.6%	\$3.71	-6.9%
Europe	\$3.53	\$3.44	-2.5%	\$3.49	-1.2%
Japan	\$4.31	\$4.10	-4.8%	\$3.80	8.0%
Asia-Pacific	\$10.79	\$10.49	-2.7%	\$10.49	0.0%
<b>World Total</b>	<b>\$22.28</b>	<b>\$21.49</b>	<b>-3.6%</b>	<b>\$21.48</b>	<b>0.0%</b>

Jan'08 Regional Chip Sales			
(US\$Billion)			
Market	Sales	MoM	YoY
Americas	\$3.12	-18.1%	-5.7%
Europe	\$3.08	-17.3%	-2.4%
Japan	\$3.69	-15.9%	0.1%
ROA	\$9.26	-19.4%	1.4%
<b>TOTAL</b>	<b>\$19.16</b>	<b>-18.2%</b>	<b>-0.7%</b>

## ATE STOCKS

Ticker	Close	Change	52 Week	
	03/31	Month	High	Low
AEHR	\$8.45	15.8%	\$8.72	\$5.41
ATRM	\$3.94	-16.0%	\$6.24	\$3.53
ATE	\$26.32	5.8%	\$48.66	\$19.31
GSCD	\$7.98	4.0%	\$14.47	\$7.13
COHU	\$16.25	3.9%	\$23.70	\$13.27
CMOS	\$1.70	19.7%	\$4.08	\$1.18
EGLS	\$1.45	-15.7%	\$2.75	\$1.12
EGLT	\$10.50	0.3%	\$18.14	\$9.31
ESIO	\$16.48	1.8%	\$25.64	\$15.42
FORM	\$19.10	6.5%	\$48.48	\$16.17
INTT	\$2.10	-1.9%	\$4.93	\$1.75
KLIC	\$4.78	-7.2%	\$12.46	\$4.55
LTXX	\$3.14	-3.4%	\$6.42	\$2.25
PHTN	\$10.60	2.4%	\$12.85	\$7.71
TER	\$12.42	3.6%	\$18.53	\$8.75
VRGY	\$18.84	-6.3%	\$30.25	\$17.04
<b>Avg. Change</b>	<b>0.8%</b>			

## ATE Sales

### Aehr Test Systems

Said it received customer acceptance on the first FOX-15 wafer-level burn-in system from a major automotive IC manufacturer.

Said **SMART Modular Technologies** purchased its MTX-Fp+ system.

### Credence Systems

Said **Haier IC Design** (Beijing) has purchased its Diamond D10.

### Electroglas

Said it has signed a purchase agreement with **Amkor** for "double-digit" quantities of its EG6000 probers.

Said it has shipped the 9<sup>th</sup> EG6000 to **Lattice Semiconductor**

### Teradyne

Said that **Hisem**, a new Korean sub-contract test house, has completed the installation of 15 Nextest Magnum SSV 320-site test systems.

Said that **Broadcom** has selected the **UltraFLEX** system with its new 12G wireless solution

Said that **Amlogic** has selected its J750Ex for next-gen processor test.

### Verigy

Said **ASE Test** has purchased its **Port Scale** RF solution.

## FINANCIAL REPORTS

### Aehr Test Systems

FQ3 Ending Feb 29 : \$000

	2008	2007
Sales	\$10,792	\$5,687
Ops. Pft.	1,703	65
Net	1,926	265
Per shr.	0.23	0.03

### Credence Systems Corp.

FQ1 Ending Feb. 2/3 : \$000

	2008	2007
Sales	\$63,202	\$118,797
Ops. Pft. (50,790)	(462)	
Net	(56,127)	(11)
Per shr.	(0.55)	(0.00)

### Electroglas, Inc.

FQ2 Ending June 30 : \$000

	2008	2007
Sales	\$11,553	\$9,809
Ops. Pft.	(2,958)	(3,023)
Net	(3,748)	(3,123)
Per shr.	(0.14)	(0.12)
Orders	\$13,900	\$12,800

### Mentor Graphics Corp.

FQ4 Ending Jan. 31 : \$000

	2007	2006
Sales	\$284,820	\$249,626
Ops. Pft.	67,453	48,882
Net	35,724	30,982
Per shr.	0.39	0.36

FYr. Ending Dec. 31: \$000

	2007	2006
Sales	\$879,732	\$802,839
Ops. Pft.	70,967	60,453
Net	28,771	27,204
Per shr.	0.32	0.33

### inTEST Corp.

FQ4 Ending Dec. 31 : \$000

	2007	2006
Sales	\$11,411	\$13,159
Ops. Pft.	(4,096)	(83)
Net	(4,180)	81
Per shr.	(0.45)	0.01

FYr. Ending Dec. 31: \$000

	2007	2006
Sales	\$48,705	\$62,346
Ops. Pft.	(6,853)	3,520
Net	(6,739)	2,871
Per shr.	(0.73)	0.32

## Top 15 IC Chip Eqpt. Mostly Unchanged

VLSI Research said that, "Despite a late-year slowdown amid US economic uncertainty, 2007 turned out to be a decent year for major IC equipment suppliers, with just a few shufflings in the rankings.. The top 15 suppliers represented two-thirds (67 percent) of the total market, up from 65 percent a year ago.

According to VLSI's numbers, released last month, Regional representation among the top 15 didn't change a whole lot from 2006, with the US (47 percent) and Europe (16 percent) both adding a percentage point in terms of total revenues, while Japan (37 percent) lost two percentage points

VLSI noted that 2007 was not a great year for the Back-End equipment makers. Advantest's revenues fell 13 percent, Teradyne's and Verigy's were both down 19 percent.

### Top 15 IC Eqpt. Suppliers

(Revenues in US\$M)

	Company	2007	2006	YoY
1	<b>Applied</b>	\$8,523	\$8,494	0.3%
2	<b>TEL</b>	\$6,291	\$5,072	24.0%
3	<b>ASML</b>	\$5,145	\$4,538	13.4%
4	<b>KLA</b>	\$2,781	\$2,357	18.0%
5	<b>Lam.</b>	\$2,624	\$2,201	19.2%
6	<b>Nikon</b>	\$2,148	\$1,895	13.4%
7	<b>Advantest</b>	\$1,657	\$1,906	-13.1%
8	<b>Novellus</b>	\$1,555	\$1,637	-5.0%
9	<b>Hitachi HT</b>	\$1,445	\$1,272	13.6%
10	<b>Dainippon</b>	\$1,330	\$1,323	0.5%
11	<b>Canon</b>	\$1,309	\$1,287	1.7%
12	<b>ASMI</b>	\$1,172	\$967	21.2%
13	<b>Varian</b>	\$1,074	\$786	36.6%
14	<b>Teradyne</b>	\$876	\$1,086	-19.3%
15	<b>Verigy</b>	\$762	\$941	-19.0%

**Top 15**     **\$38,692**   **\$35,762**   **8.2%**

**Industry**   **\$57,500**   **\$53,500**   **7.5%**

**Top 15%**     **67.3%**     **66.8%**   **0.7%**

Source: VLSI Research, Mar. 2008

## '07 Chip Market Suffered from Bad Memories

The now widely recognized weakness in the memory chip market in the fourth quarter of 2007 took the wind out of the sails of the global semiconductor market, causing growth in 2007 to fall short of expectations, according to iSuppli. Worldwide DRAM revenues fell by 19.1 percent QoQ in the fourth quarter. Meanwhile, NAND FLASH revenues declined by 3.9 percent well below iSuppli's previous forecast of a 3 percent growth.

If memory were excluded from the revenue total, the semiconductor market would have grown by 2.4 percent in the fourth quarter it said. However, due to the influence of the weak memory market, total semiconductor revenues fell by 0.5 percent in the fourth quarter" it said.

With the exception of Sony, it was two US fabless chip suppliers - Qualcomm and Nvidia - that led the growth among the Top-25 chip companies during 2007.

Overall, the Top-25 suppliers significantly outperformed the combined performance of companies ranked below them in 2007. The Top-25 as a group achieved revenue growth of 4.5 percent in 2007 while the combined growth of all other semiconductor suppliers was only 0.8 percent.

### Top-25 Semiconductor Suppliers by Revenues

(US\$M)

'06Rk.	'07Rk.	Company	'06Rev.	'07Rev.	YoY	Mkt. Shr.
1	1	Intel	\$31,542	\$33,995	7.8%	12.6%
2	2	Samsung	\$19,842	\$19,691	-0.8%	7.3%
3	3	TI	\$12,600	\$12,275	-2.6%	4.6%
4	4	Toshiba	\$10,141	\$12,186	20.2%	4.5%
5	5	STMicro	\$9,854	\$10,000	1.5%	3.7%
7	6	Hynix	\$7,865	\$9,047	15.0%	3.4%
6	7	Renesas	\$7,900	\$8,001	1.3%	3.0%
14	8	Sony	\$5,129	\$7,974	55.5%	3.0%
15	9	Infineon	\$5,119	\$6,201	21.1%	2.3%
8	10	AMD	\$7,506	\$5,918	-21.2%	2.2%
9	11	NXP Semi	\$5,707	\$5,746	0.7%	2.1%
11	12	NEC	\$5,601	\$5,742	2.5%	2.1%
16	13	Qualcomm	\$4,529	\$5,619	24.1%	2.1%
10	14	Freescale	\$5,616	\$5,264	-6.3%	2.0%
13	15	Micron	\$5,247	\$4,869	-7.2%	1.8%
12	16	Qimonda	\$5,413	\$4,005	-26.0%	1.5%
19	17	Elpida	\$3,527	\$3,838	8.8%	1.4%
17	18	Matsushita	\$4,022	\$3,800	-5.5%	1.4%
18	19	Broadcom	\$3,668	\$3,746	2.1%	1.4%
25	20	Nvidia	\$2,578	\$3,466	34.4%	1.3%
20	21	Sharp	\$3,341	\$3,401	1.8%	1.3%
21	22	IBM	\$3,172	\$2,977	-6.1%	1.1%
26	23	Marvell	\$2,550	\$2,777	8.9%	1.0%
23	24	ADI	\$2,603	\$2,707	4.0%	1.0%
22	25	Rohm	\$2,882	\$2,633	-8.6%	1.0%
<b>Other companies</b>			\$82,401	\$83,027	0.8%	30.9%
<b>Total revenues</b>			<b>\$260,355</b>	<b>\$268,905</b>	<b>3.3%</b>	<b>100.0%</b>

Source: iSuppli March 2008

## Credence FQ1'08 Financial Rpt.

Credence Systems reported sales for its first F'08 quarter, ended Feb. 2, 2008, were \$63.2 million, down 35 percent sequentially, and down 47 percent from the same quarter of fiscal 2007. Its loss for the quarter was \$56.1 million, or \$0.55/share, as compared a net of \$5.6 million, or \$0.05/share, in the previous quarter. The loss included a \$10.7 million restructuring charge, and a \$23 million non-cash Impairment charge, related to the divestiture of its Diagnostics Products to DCG. Bookings for the quarter were about \$83.2 million for a B/B of 1.3.

Product sales were \$41.1 million, down 44 percent QoQ, Revenue from its high end consumer and MPU sales were \$17.4 million, down 15.5 percent QoQ. Mainstream consumer sales were \$21.5 million, down 49.7 percent QoQ.

Lavi Lev, its president/CEO noted that "Credence products had good traction in the quarter, as our strategy to provide unique value to customers in the consumer semiconductor market began to take hold. This quarter, our business for ASL came from existing customers for capacity expansion. As for Diamond, we had two major design wins in the area of mixed signal SoC and digital consumer markets, In the MPU space, Sapphire continues to be the plan of record for MPU testing at AMD, where we expanded our position in Q1, with both new systems and instrument upgrades. We expect to see our position strengthening with this customer throughout the year.

I want to clarify the Sapphire market positioning. From a test solution point of view, MPU and high end consumer devices have the same ATE development and deployment needs. Therefore, Sapphire addresses both market needs with the same exact tester configuration." He added, "As for competitive landscape, we did not see competitive traction in any of our key accounts.

## FOCUS ON Verigy vs. STS



On August 22, 2007 Verigy filed a Complaint, in the U.S. District Court for the Northern District of California, against a former employee, Romi Omar Mayder, his brother Wesley Mayder and their start-up company Silicon Test Systems. Verigy's complaint alleged "breach of contract, trade secret misappropriation and intentional interference with prospective economic advantage and unjust enrichment."

On August 24, 2007, the Judge hearing this case, Ronald M. Whyte, issued a temporary restraining order – based on evidence presented by Verigy the court said "strongly suggested that Mayder had transmitted project documents he had authored at Verigy to a third party, Bob Pochowski, for the purpose of using those documents to launch his own independent business – against STS. That order remained in effect until the preliminary injunction was issued on February 29, 2008.

*Editor's Note: Most of the following was sourced from the heavily redacted 'Public Version' of Judge Whyte's order.*

Verigy's Complaint sought a "preliminary injunction" based largely on its "trade secret misappropriation" claim. Under California Law a 'trade secret' can be any information, including a formula, pattern, compilation program, device, method, technique, or process that:

(1) Derives independent economic value, actual or potential, from not being generally known to the public or to other persons who can gain economic value from its disclosure or use: and,

(2) Is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

Romi Mayder had been employed by Verigy and its predecessors – HP and Agilent – from 1998 until September 21, 2006. During the latter part of his employment at Verigy Mayder had worked on several projects there involving the development of methods to 'fan-out' of FLASH memory tester resources to expand the number of chips that could be tested in parallel.

According to Mayder, while still employed at Verigy, the approach that Mayder had been working on was canceled, so he decided to start his own company to commercialize that technology, which he felt Verigy had abandoned. He registered the Web domain name *silicontests.com* on June 15, 2006. At that time he also contacted Bob Pochowski to explore his interest in forming a company with him, presumably as both an investor and a technology resource.

Pochowski had founded NOR FLASH tester maker Versatest in 1988 with Keith Armstrong. In 1994 they sold the company to HP for a reported \$14 million, which they effectively split. He served as head of HP's and Agilent's memory tester groups at various times and eventually became a technical consultant to the company when it became Verigy.

According to court documents Mayder had transmitted a number of documents to Pochowski at that time. These included a draft RFQ – which he also sent to Honeywell for a quote – for a semiconductor chip containing an unspecified number of solid-state switches and a spread sheet of NAND FLASH wafer sort requirements for five of Verigy's customers. He also sent Pochowski a PowerPoint presentation titled "Tester Expander".

(Verigy asserts these actions were in direct contradiction of a confidentiality and proprietary development agreement Mayder had signed as part of his employment at Verigy, which is dated just one month before he sent these documents to Pochowski.)

Sometime after July 2006 Pochowski agreed to become Mayder's business partner, along with Mayder's brother Wesley. However, he left STS in December 2006 after a disagreement over each partner's ownership of STS. According to court documents he became "the source of information upon which Verigy bases its allegations."

STS planned to base its business on a family of products it called "Flash Enhancer" ICs. That according to information on its presently shutdown Web site It describes them as "uniquely designed devices to optimize the parallelism of already installed ATE test cells supporting the full array of today's high volume memory devices, FLASH, DRAM, and MCPs."

It further claimed that "The use of our integrated circuit products will enable an existing wafer sort test cell to test up to 2X or 4X the existing number of DUTs. For example our integrated circuit products transform a 2 TD [Touch Down] test cell into a 1TD test cell with minimal test time overhead. They will also enable an existing final test cell to test up to 4X or 8X the existing number of DUTs. For example our integrated circuit products transform a 256 in parallel test cell into a 512 in parallel test cell."

STS originally had targeted its first Flash Enhancer product at NAND FLASH makers but did not find any interest "because the potential customers decided to manufacture their own resource sharing circuits." It then turned to NOR FLASH makers and found interest in its approach from Intel and Spansion. (STS argues that it had to redo [the Verigy design] to meet those customers' NOR test requirements.)

However the court was not convinced as Verigy had presented evidence that many of the features of the 'new Flash Enhancer' are relatively unchanged from what they were when Mayder was still at Verigy. However, the court also concluded that Verigy had not presented evidence that these companies' requirements on which the present version of the Flash Enhancer is based were originally collected by Verigy.

The court concluded that STS's product, though now based on NOR rather than NAND test "is substantially based on Verigy's trade secrets. However it, at the very least, has relatively significant changes from what was developed at Verigy, including features added based on customer requirements that were not originally collected by Verigy." Accordingly the court said it "cannot say the Flash Enhancer is solely an embodiment of Verigy's trade secrets."

It also concluded that "it appears that Mayder, given his skill and experience, could have eventually developed the Flash Enhancer without benefit of any Verigy trade secrets by referring to publicly-available references regarding fan-out technology."

Finally, the court concluded that STS had obtained a 'head-start' on the development of its Flash Enhancer product [as a result of Mayder' work at Verigy.] It decided that "Accordingly, it would enjoin STS for a period of five months from the date of its order [presumably until August 1) from marketing, distributing, selling, licensing, leasing, transferring or disposing of its, Flash Enhancer, and any product based on Flash Enhancer"

However, its not clear that this is really the end of this story. The Judge accepted Verigy's motion to "strike STS's affirmative defenses. STS was given 20 days to present "facts to support their affirmative defenses." In addition he required STS to show cause why they should not be held in contempt of the initial injunction.

A hearing on both of these matters is scheduled for April 11.

So, stay tuned!

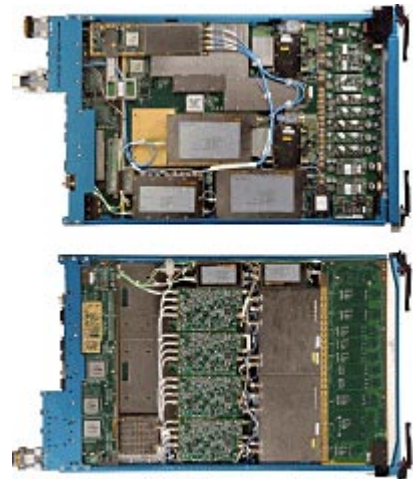


**T**eradyne introduced its new *UltraWave* test instrument for its *UltraFLEX* test platform. It offers 12 GHz source and measurement performance, with greater parallel test efficiency and covers the entire spectrum of current and emerging connectivity and cellular technologies, according to the company. It also said it has already has received orders from "multiple customers" for the product with Broadcom the first customer to take delivery of the instrument.

UltraWave's unique universal port architecture provides 12 GHz source and measure with uniform test capability on every port. UltraWave can be configured with up to 64 universal RF ports per instrument set and multiple instruments per system, easily providing parallel octal site test without needing complex DIB circuitry for high port count devices, such as WEDGE transceivers and 802.11n applications.

UltraWave incorporates Teradyne's patent-pending *TVS* synthesizer technology that provides fast settling time to 0.07dB within 1 millisecond and superior phase noise. Teradyne said that "UltraWave delivers DSP per receiver with calculations performed in less than 20 microseconds.

UltraWave leverages Teradyne's *UltraFLEX* system architecture that incorporates *Sync-Link* test technology for pattern-controlled instrument set-up at device clock speed, *System Broadcast* for faster, high-efficiency instrument set up



**UltraWave 12G Wireless Test Cards**

Also a Background DSP environment puts data moves and analysis in the background of program execution. The result is the highest parallel efficiency for RF multi-site test.

The *UltraFLEX* system's *IG-XL* software operating system provides fast program development and automatic conversion of programs from single-site to multisite test. Graphical on-screen displays, like Smith charts, vector scopes, Constellation, and EVM simplify program analysis, debug and correlation to bench instrumentation for faster time to market. Variables and debug tools are available on a site-by-site basis and provide the ability to control all sites simultaneously.

#### Features & Specifications

- Up to 96 universal RF ports per instrument set
- Multiple instrument sets/system
- 50 MHz to 12 GHz Source and Measure
- Parallel stimulus and measure capability
- Noise source per port
- Vector network analyzer
- DSP per receiver
- Integrated AWG for modulated signal generation
- Integrated Low Phase Noise Reference Source
- 4 DUT LO source pins (50 MHz to 6 GHz)
- 4 DUT Reference source pins (8 MHz to 100 MHz)

## Credence DD1096-32 Diamond Instrument

Credence Systems introduced its DD1096-32 digital instrument – an update of its previous DD1096-16 instrument increasing its parallel vector memory to 32M – for its Diamond test platform, at SEMICON China last month. Using the 96 channel DD1096-32 within the 10-slot Diamond 10 offers customers up to 768 channels, each with 32M of parallel vector memory depth.

The DD1096-32 also enables up to 256 scan chains and over 77G of scan vectors. For massive multisite use in high-mix, high-volume production applications the 40-slot Diamond 40 with DD1096-32 scales up to 3072 channels with up to 1024 scan chains and over 309G scan vectors.

The company said, “The DD1096-32 instrument’s larger memories also provide enhanced test and debug capability with full memory depth deep fail and data capture which allows customers to quickly and confidently test complex, highly integrated devices in a single pass.

At less than US\$600/pin, the fully featured digital instrument offers the industry’s best combination of performance and density in an air-cooled test system the size of a large desktop computer.”

Each of the 96 digital channels offers parametric measurement units, independent timing, formats and levels that enable flexible edge placement and digital signal creation for complex tests. Its 100MHz pattern sequencer can provide 200MHz clocks and drive data rates up to 200Mbps.

The DD1096-32 comes with a flexible instruction set to support conventional functional tests, along with STIL-based EDA integration for structural test methods. It can handle any combination of input or output chains, useful for built-in self test (BIST) enabled devices. Moreover, two bits per scan output cycle allows masking of failing scan cells to improve debug productivity



## Pintail and Salland Join on Adaptive Test

Pintail Technologies and Salland Engineering (Zwolle, Netherlands) have partnered to share technology roadmaps and product integration plans for Adaptive Test solutions, as well as conducting joint marketing on a worldwide basis. The companies said that “Numerous customers of both company’s products have recognized the synergistic fit between the product lines and have encouraged the companies to collaborate more closely.”

Taylor Scanlon, president/CEO of Pintail said, “Salland’s *SE-PROBE* is a comprehensive real time wafer mapping and dynamic test cell controller on the market today. Its solutions for Adaptive Test are complementary to Pintail’s and expand our solutions for test optimization and dynamic parts average testing (DPAT.)

The companies plan to closely integrate *SEDana* (Salland’s tool for statistical analysis of ATE test data) as the off-line analysis tool used to predict the performance of Pintail’s *SwifTest-MX* when used for test time reduction and *SwifTest-AQ* for adaptive quality improvement. In addition, test floor managers will now be able to integrate the real-time OEE capabilities of Pintail’s *TestScape* system with the functionality of Salland’s real time test cell controller *SEPROBE*. “TestScape provides test floor managers a real-time dashboard to monitor multiple test floors and many brands of ATEs,” stated Keith Arnold, Pintail’s Chief technical Officer.

“By adding Salland’s *SE-PROBE* as the test cell controller, test floors will be able to improve the data integrity of the enormous volumes of test results being monitored. *SEPROBE* also provides sophisticated capabilities to reduce retest costs, improve contact life cycle management, and other on-line test optimization with Avago Technologies’ algorithms.

Pintail said it will incorporate advanced outlier detection algorithms developed by Avago Technologies into its *SwifTest* commercial software offerings. It said that Avago worked closely with Pintail over the past 12 months as Pintail re-architected *SwifTest* to accommodate more sophisticated and general purpose sets of data models and program interfaces. “Users will also be able to add their own proprietary algorithms to *SwifTest* for performing on-line test time reduction or quality improvement,” Pintail said.

## LogicVision Stock Reverse Split 1:2.5

LogicVision executed a reverse split of its common stock at a ratio of 1-for-2.5 shares effective on March 12, 2008. The reverse split was required for it to maintain its listing on the Nasdaq market. LogicVision’s common stock began trading at that time on a reverse split basis under the symbol “LGVND” for a period of 20 trading days – until April 11, 2008. Thereafter, it will resume trading under its original symbol “LGVN.”

The reverse stock split will reduce the number of outstanding shares of LogicVision’s common stock from approximately 24 million shares to approximately 9.7 million shares.

### EDA STOCKS

COMPANY	Ticker	Close 03/31	Change Month	52 Week High	Low
Cadence	CDNS	\$10.68	0.6%	\$24.90	\$9.89
LogicVision	LGVN	\$1.59	-9.1%	\$3.00	\$1.20
Mentor	MENT	\$8.83	-3.0%	\$17.38	\$7.51
Synopsys	SNPS	\$22.71	-2.2%	\$29.11	\$21.13
Avg. Change			-3.4%		



### SEAJ Feb. B/B at 0.85

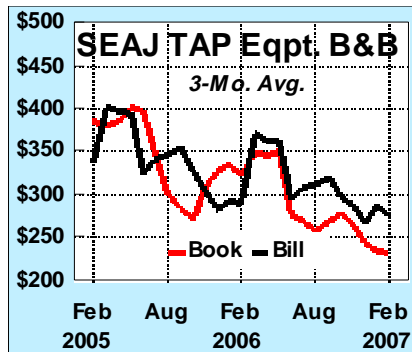
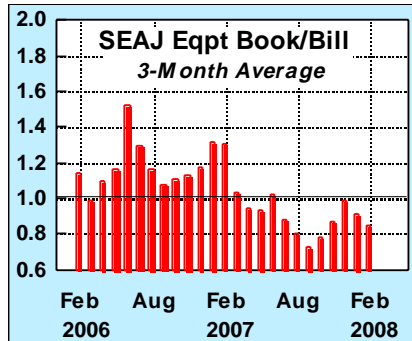
The SEAJ said Japan's chip equipment makers reported ¥112,493 million (US\$1,029.02) in orders in February 2008 (three-month average basis). The bookings figure was down 11.0 percent from the final January 2008 level of ¥126,424 million (US\$1,143.07) and 42.5 percent down from the ¥195,575 million (US\$1,650.93) in orders posted in February 2007.

The three-month average of billings in February 2008 was ¥132,322 million (US\$1,210.40), down 4.3 percent from January 2008 level of ¥138,219 million and 11.6 percent down the February 2007 billings level of ¥149,632 million (US\$1,253.87). The resulting February book-to bill ratio was 0.85, down from 0.91 in January and below unity for the eighth consecutive month

In comparison SEMI reported 3-month average bookings by No. American equipment suppliers were \$1,228.9 million for February, up 7.7 percent MoM, but down 12.1 percent YoY. Billings were \$1,315.2 million in February, up 2.8 percent MoM, but down 7.6 percent YoY. SEMI's book-to-bill ratio was 0.93.

### JAPANESE ATE STOCKS

INDEX	Ticker	Close 03/31	Change Month
NIKKEI 225	N225	12,526	-7.9%
Advantest	6857	2,585	-2.3%
JEM	6855	856	-3.2%
MJC	6871	3,190	-8.1%
TEL	8035	6,060	-8.2%
TSK	7729	1,830	-6.3%
Yokogawa	6841	998	-9.4%
Average Change in February			-6.2%



### Japan TAP February Eqpt. B/B at 0.85

Japan's Test, Assembly and Packaging (TAP) equipment makers reported actual bookings for February of ¥25,850 billion (US\$241.0 million), up 8.7 percent MoM but down 28.3 percent YoY. Actual billings were ¥24,814 billion (US\$232.4 million), up 0.6 percent MoM, but down 16.5 percent YoY.

On a three-month average basis, Japan-based TAP equipment makers February bookings were ¥25.379 billion (US\$232.15 million), down 4.3 percent MoM, and down 30.0 percent YoY. Three-month average billings were ¥30,019 billion (US\$274.60 million), up 4.9 percent MoM and down 8.6 percent YoY. The resulting book-to-bill ratio for Japan TAP makers was 0.85 for February 2008.

In comparison, Semi reported that No. America-based Test, assembly and packaging (TAP) equipment bookings were \$220.7 million in February up 6.9 percent MoM up 15.9 percent YoY. Billings were \$201.6 million, up 6.9 percent MoM, but down 1.7 percent YoY. Semi's TAP B/B was 1.09.

## '07 Global Chip Eqpt Revenues Hit \$42.8 B

SEMI and SEAJ reported that worldwide sales of chip totaled \$42.77 billion in 2007, up 5.7 percent YoY, about twice the estimated chip revenues growth. Stanley Myers, president/CEO of SEMI, noted that last year equipment sales to Taiwan surpassed those to Japan and the China new equipment market is rapidly approaching the size of Europe's new equipment market - even as sales in Europe increased by 8 percent.

For the first time, the Taiwan market region spent more semiconductor equipment than any other region, growing 46 percent over 2006 to reach US\$10.65 billion. Japan claimed the number two spot with \$9.31 billion in equipment sales. South Korea ascended to third place reaching \$7.35 billion, passing North America at \$6.55 billion. The Rest of World region, which aggregates Singapore, Malaysia, Philippines, other areas of Southeast Asia and smaller global markets, fell by 18 percent.

The global wafer processing equipment market segment increased 11 percent; the assembly and packaging segment grew 15 percent. But, the total test equipment sales decreased 21 percent YoY. Other front end, which includes mask/reticle equipment, fabrication facility, and wafer manufacturing equipment increased two percent, SEMI said.

### '06-'07 Chip Eqpt. Market by Region

Region	2006	2007	YoY
China	2,315	2,922	26.2%
Europe	3,595	2,940	-18.2%
Japan	9,209	9,310	1.1%
So. Korea	7,014	7,352	4.8%
N. America	7,324	6,548	-10.6%
Taiwan	7,308	10,648	45.7%
ROW	3,709	3,045	-17.9%
<b>Total</b>	<b>40,474</b>	<b>42,765</b>	<b>5.7%</b>

Source: SEMI-SEAJ



There was plenty for everyone at the 2008 and 9th annual Burn-in & Test Sockets Workshop (BiTS) regardless of their specialty within package test and burn-in. It featured a full technical program of paper presentations, posters, tutorials, prominent speakers and an EXPO featuring products and services from leading suppliers. It also offered an extensive social program to promote networking.

The sold-out EXPO brought the latest products and services from 60 exhibitors to the 350 attendees (30 percent international) and the more than 150 exhibit-only participants.

The technical program's featured speakers delivered important talks on trends in packaging. Dr. Belgacem Haba, Fellow and CTO of Advanced Packaging and Interconnect at Tessera delivered the Invited Talk, while Dr. Karl J. Johnson, VP/Senior Fellow of the Advanced Packaging Systems Integration Laboratory at Freescale Semiconductor was the Keynote Speaker. Filling out the technical program were 26 paper presentations across 8 sessions, and 9 posters in 2 poster sessions.

There were also two tutorials. Ann Swift, Senior Reliability Engineer at IBM Microelectronics opened the Tutorial program with *Basic Chip Reliability Concepts*. This was followed by *"Intellectual Property: What Is It and What Do I Do With It?"* by Ira Blecker, Esq., a Patent Attorney with the Law Offices of Ira D. Blecker.

BiTS was held at the Hilton Phoenix East /Mesa Hotel in Mesa, AZ and included meals, receptions, a casino/ karaoke party with a casino, karaoke & hors d'ouvres, and, of course, the warm Arizona sun.

"An integral part of BiTS is to complement the technical program and EXPO with a social program that encourages networking", said Fred Taber, the BiTS Workshop's General Chair.

Dr. Karl Johnson spoke to the "challenges that are going to be facing the semiconductor industry with respect to packaging and assembly" in his keynote address *Packaging & Assembly in Pursuit of Moore's Law and Beyond*. He note that "over the history of the semiconductor industry the magic was felt to be in the silicon, silicon processing and in the design" but that now "as we continue to move down Moore's Law in the world of digital silicon, the assembly technology and packaging technology are now becoming an integral part of the overall system".

He emphasized that today "you cannot develop your silicon solution without a clear understanding of how your assembly technologies and your packaging are going to influence the overall performance of your system." He concluded by saying that "the market demands of systems Integration with increasing functionality, time to market, flexibility, reuse and 'cost, cost, cost' are necessitating a revolution in packaging and assembly technologies."

Dr. Belgacem Haba then took the audience on a tour of the latest 3D packaging technologies with his invited talk, *Catching the Mobile Wave: Packaging is Going 3D*. Pointing out that silicon consumes a small fraction of the space in a product and that the rest is packaging, he highlighted that "stacking as many die as possible in the Z-direction enables more silicon in less space thus smaller and lighter products with more function."

In closing, Dr. Haba noted that complex testing schemes would need to arise to handle the challenges of 3D packages that are thinner, with tighter I/O pitches (and contacts on the top and bottom), and often are multi-die with more embedded passives.

During the 8 Technical Sessions and 2 poster sessions, authors from across socketing and related industries shared their recent work on a broad range of topics. Among award-winning papers and posters were :

Best Paper; *Optimized Air Cooled Test Socket* – Grant Wagner, David Gardell; IBM Microelectronics

Best Poster; *Complete Z0= 50 Ohm Coaxial Spring Probe IC Socket* – Tatsumi Watabe; S.E.R. Corp.

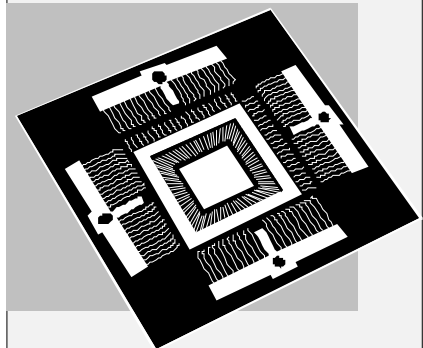
Best Data *New Concept in Spring Probe Design* – John Winter, Larre Nelson, Amos Friedner; Rika Denshi.

Best Tutorial; *Thermal Design and Analysis*" Harlan Faller; Johnstech

Most Inspirational: *Batting Cleanup: Approaches to Maintenance of WLCSP Probe Card Interposers*" Jon Diller, Jamie Andes ; Interconnect Devices.

Attendee Choice "*CO2 Composite Spray Technology For Test Socket Cleaning*" David Jackson; Cool Clean Technologies

## ATE/DFT MEETINGS



**June 4 - 6**

*Global STC Conference  
Hilton Hotel Mission Valley  
San Diego, CA  
<http://www.semitest.org>*

**June 8 - 11, 2008**

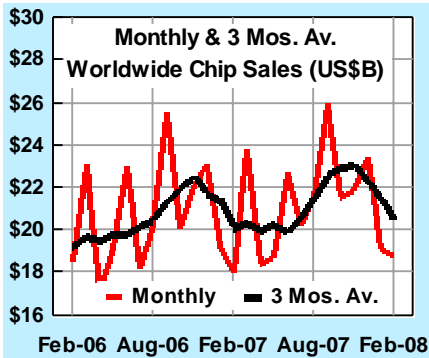
*SW Test Workshop  
Paradise Point Resort  
San Diego CA  
<http://www.swtest.org>*

**June 8 - 13, 2008**

*Design Automation Conf  
Anaheim Convention  
Anaheim, CA  
<http://www.dac.com>*



## INDUSTRY



The SIA said WS chip sales (3-month avg.) in February were \$20.44 billion, up 1.5% YoY, but down 4.9% MoM.

### Industry Forecasters cut estimates for 2008 chip sales growth.

- **Gartner-Dataquest** cut its IC forecast by half from its December estimate. It now expects the IC market to grow by just 3.4% YoY in 2008.
- **In-Stat** now believes that demand for chips will soften in 2008 growing just 2.4 YoY to \$261.9.
- **IC Insights** stuck with its forecast of 9 percent IC market growth for all of 2008, but said the Q1 results will reveal more about the outlook.

## COMPANIES

**Electroglass** announced that it has been awarded a patent for its proprietary *Microtouch* probe card impact control algorithm.

**Galaxy Semiconductor Solutions** said **Freescale Semiconductor** has selected its *PAT-MAN* Characterization - a software solution for Part Average Testing (PAT) and related dpm reduction techniques.

**Eagle Test** and **Ismeca Europe Semiconductor SA** announced plans to partner to provide integrated Final Test solutions for Index Parallel Testing of Discrete Devices.

**Wentworth Laboratories**, announced a new vertical probe card solution - *Micromax* - for pre-bump flip chips or aluminum bond pads as an alternative to cantilever type probe cards

**Cadence Design Systems** has acquired **Chip Estimate** (Cupertino, CA), a provider of IC planning and enterprise-level IP reuse management solutions. Terms of the acquisition were not announced.

**Synopsys** will acquire **Synplicity** (Sunnyvale CA), a provider of programmable gate array (FPGA) and IC design and verification solutions, for approximately \$188 million.

## PEOPLE

**Sergio Perez** has joined **SV Probe** as its Sr. VP of Business Development. He has held management positions at **Teradyne**, **Advantest** and most recently at **FormFactor** and was involved in the founding of the **Semi Test Consortium (STC)**.

**Jean Bernard Vernet** has been named CFO for **FormFactor**. He was previously director of risk and assistant treasurer of **Rio Tinto's** aluminum product group. He replaces **Ronald C. Foster**, who joined **Micron Tech.** as CFO/VP of Finance

**Kenneth Levy**, retired CEO /Chairman, and currently Chairman Emeritus of **KLA-Tencor** and **NICE Systems** CEO **Haim Shani** have joined the board of **OptimalTest**

**Hal Lasky** has joined **STATS ChipPAC** as Exec. VP/ Chief Sales Officer, based in the U.S. Prior to joining **STATS ChipPAC**, Lasky spent 24 years at **IBM**.

**Gennady Krasnikov**, president/CEO, **Mikron JSC**, (Zelenograd, Russia), has joined the **Global Semiconductor Alliance's EMEA's** (Europe, Middle East, Africa) Leadership Council

**Nigel Dessau** has joined **AMD** as its chief marketing officer he had previously been with **IBM** and **Sun**,

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