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New Rec: LTX Corp. (LTXX: \$12.60) September 28, 2003

Position: Sell Target: \$7 Timing: 2 (1=aggressive; 5=cautious)

\$000	FQ1 04e	FQ2 04e	FQ3 04e	FQ4 04e	F2004e	F2005e
Revs	38,000	42,000	46,000	50,000	176,000	249,000
EPS\$	(0.24)	(0.18)	(0.12)	(0.05)	(0.60)	0.20
Y/Y Gr	n/a	n/a	n/a	n/a	n/a	n/a
PE	n/a	n/a	n/a	n/a	n/a	63.0
PSR	n/a	n/a	n/a	n/a	3.7	2.6
Consens	(0.25)	(0.16)	(0.07)	0.02	(0.45)	0.44

Shares Out: 52M

Market Cap: \$651M

FYE: Dec

Summary: LTX Corporation (LTXX) provides semiconductor test solutions tailored to the system-on-a-chip (SOC) market. SOC devices contain digital logic, analog circuitry and memory on a single chip. Examples of such chips include digital signal processors (DSPs), DVD-ROM chips, and graphics chipsets. LTXX

offers testers based on a single platform solution – the Fusion. The company’s two primary offerings are the Fusion HFi (at an ASP of \$2M+) for high-end devices such as DSPs, and the Fusion CX (ASP of \$500K) for low-end chips such as chips meant for consumer electronics.

Semiconductor chips are tested after fabrication and after packaging to identify defective chips, which are discarded before shipment to customer. Therefore semiconductor testers, which are part of the back-end equipment group since they are used after chips fabrication, are not value adding chip equipment in the way lithography tools or etchers (front-end equipment) are, and companies such as Intel have been working hard to reduce the cost of test.

Based on our experience, chipmakers place a higher priority on front-end equipment purchases because they are essential to obtain improved chip characteristics and lower manufacturing costs. In test, however, instrumentation upgrades (without buying a whole new tester) can satisfy the requirements for testing a faster chip. A look at the revenues of leading equipment makers demonstrates this point. For instance, while Teradyne saw its revenues decline 72% from calendar 2000 to calendar 2002, Novellus and Applied Materials witnessed relatively lower declines of 36% and 50%, respectively. Yet, testers are important from a quality control perspective and chipmakers will continue to employ them until a better method of screening defective chips comes along. Nevertheless, we think the argument that test equipment sales growth should match front end equipment growth is fallacious.

After reaching a peak of \$6.9B in 2000, the semiconductor tester market fell to \$2.2B in 2002. Among the reasons for this 68% decline are the glut in chip inventories at the end of 2000, chipmakers’ ability to increase utilization of existing testers, and significant used tester availability. These factors have led to decreased orders for tester makers and intense price competition. While memory test was most affected by these developments, these developments also had a significant adverse impact on the SOC test market. For example, after reaching a peak of \$330M in fiscal 2001 (ending July 31), LTXX’s revenues plummeted 63% to \$121M in F2002, and remained flat (\$119M) in F2003.

LTXX’s primary competitors in the SOC tester market include Teradyne, which offers medium- and high-end testers based on the Catalyst platform and low-end testers based on the Integra Flex platform, and Agilent, which, like LTXX, offers a single platform solution based on the 93K platform. Other competitors include NPTest, which competes at the high-end, and Credence, which is more of a low-end competitor.

According to Prime Research's market data, Teradyne was the market share leader in the SOC test market with a 32% share in 2002. Agilent, NPTest and LTXX had 19%, 12% and 7% shares, respectively. According to the data, Agilent and NPTest have demonstrated the best share gain performance from 2000 to 2002, while Teradyne lost some share and LTXX maintained flat share.

The chief reason for Agilent's and NPTest's performance in this period is their penetration of the Asian test subcontractors, who have graduated from low-end testing to taking on more of the testing outsourced by the integrated device manufacturers (IDMs). However, our industry sources told us that Teradyne has started to regain share in the past year due to the outstanding high-end performance of its Catalyst Tiger tester.

Importantly, LTXX's ability to maintain share in this period has been primary due to the selection by Texas Instruments (TI) of the Fusion HF tester for testing TI's DSP chips. In F2003, TI constituted 58% of LTXX revenues, up from 19% in F2000. As we describe in the discussion section, LTXX revenues increased 8% in F2001, and decreased 63% and 2% in the next two fiscal years. Absent TI's contribution, LTXX's revenues would have decreased 1%, 73%, and 25% in those fiscal years. As a result, it appears that LTXX lost share of all non-TI revenues in the market.

LTXX bulls have been touting the stock, especially since August 27 when the company reported better than expected FQ4 03 results. In their view, the increased orders reported by the company and management's positive comments regarding tester utilization on the conference promise to rapidly resuscitate the company's fortunes. While "street" analysts forecast a sizeable loss in F2004, some project that profits in F2005 will approach those at the F2000 bubble peak (when the share price hit \$52), and recommend purchase of shares.

In our opinion, this bullish case glosses over several significant fundamental problems facing LTXX. The first of these is the dependence on TI. While management has over the past several conference calls reiterated its intention of obtaining 2-3 new customers every quarter and has claimed 11 new wins in each F2002 and F2003, the benefits of this diversification attempt have not manifested themselves in the reported financial results. Part of the reason underlying this discrepancy appears to arise from the fact that many of these new customers have ordered the Fusion CX, which delivers only a quarter of the revenue of the higher-end Fusion HF. Another reason, based on conversations with industry sources and comments by management on conference calls, could be because of the LTXX's willingness to place systems at potential customers with the hope of obtaining revenue when the utilization of these "donated" systems reaches a certain level.

Management has said that some of these diversification efforts would translate into revenue only after 2-5 quarters due to the long sales cycles for testers. However, industry sources with whom we spoke were not optimistic about LTXX's prospects. According to them, Agilent and Teradyne competed for most high-end bake-offs with NPTest showing some presence in Asia, while at the low-end, it is primarily Agilent, Credence and Teradyne that compete for design wins. These comments are confirmed by a recent Morgan Stanley report based on a visit to Taiwan, which we discuss later. 2002 customer satisfaction survey results conducted by VLSI Research are not of much help to the company, either. LTXX finished behind all of its competitors.

According to these sources, one of the difficulties facing the high-end Fusion HFi was that it was developed jointly with TI and, therefore, may not be suitable for other customers. In addition, the large and growing dependence on TI could result in an increasing squeeze on LTXX's margins. One of our sources cited as comparison NPTest's close ties with Intel. NPTest started supplying Intel with structural testers a few years back, and Intel came to constitute a significant portion of NPTest's revenues. Intel has started cutting back on testing costs, and according to this source, this has adversely affected NPTest. Schlumberger, which owned NPTest until recently, sold the division to a private equity firm at less than 1X sales.

While LTXX management claims its testers are superior to competitive offerings, which will lead to share gain, our research does support this claim. All of LTXX's competitors have offerings that match the Fusion HFi's digital speed, and offer low-end testers that can test devices with a higher pin count than the Fusion CX can. Further, LTXX has indicated that because of its single platform strategy, it could be competitive in innovating while maintaining future R&D spending at a \$62M annual run rate, 13% below the \$71M it spent in F2002. Whether such a plan would prove successful in the intensely competitive test landscape, where Teradyne spends \$250M on R&D, remains to be seen.

Besides these competitive issues, LTXX is also constrained by its balance sheet. The company has not generated free cash for the past eight years (including in 1999 and 2000). We estimate that the company consumed \$105M in F2003. LTXX's cash balance dropped \$81M in F2003, and it has a net debt position of \$34M, which is likely to worsen in F2004. Book value has dropped from \$7.64 at the end of F2001 to \$2.02 at the end of F2003. We note that while competitors have also been significantly affected by this downturn, their balance sheets are much healthier. Credence and Teradyne have net cash positions of \$177M and \$74M, respectively.

The “street” expects LTXX to have F2004 and F2005 revenues of \$199M and \$291M, respectively, up 67% and 46% Y/Y. Yet, FQ4 03 LTXX orders were actually lower than the year ago quarter. TI forecast that capital expenditures in 2003 would be flat compared to 2002, when it spent \$800M. This is down 71% from the 2000 level of \$2.7B. The “street” analysts that follow TI expect the 2004 capex spending growth for TI to be no higher than 25% Y/Y. Teradyne said at a recent conference that its September orders were weaker than “street” expectations. Even Dataquest, whose forecasts are known to be optimistic, expects calendar year 2004 growth in the tester market to be 55% Y/Y, compared to the 70% growth that the bulls expect for LTXX in the same period. We find it difficult to reconcile the enthusiasm of the TI bulls with the other market signals, and with the capex estimates of its largest customer.

Our estimates for F2004 and F2005 revenues are \$176M and \$249M, respectively. Our EPS estimates for the same periods are a loss of \$0.60 in F2004 (versus a loss of \$0.45 expected by the “street”) and a profit of \$0.20 (versus \$0.44) for the “street”. The differences between our projections and those of the “street” result primarily from the revenue forecast differences.

Given its history of not generating cash even during good times, it is impossible to value LTXX on a discounted cash flow basis. As we discuss in the valuation section, we used very favorable NASDAQ price to sales, price to book, and price to estimated earnings multiples to arrive at a \$7 target price for LTXX. Should investors become more skeptical of the profit potential of technology firms, the multiples we used could take large haircuts and push the fair value of LTXX shares further down. We note that the company’s shares traded at \$3.12 in October 2002, and at \$0.94 in October 1998. Book value is \$2.02. Some of the same “street” analysts touting LTXX as a buy at today’s price think that an appropriate target price for Credence shares is 2X book value. If they were to apply the same valuation to LTXX shares, they might revise their opinion on the stock.

Background:

LTX Corporation (LTXX), based in Westwood, Massachusetts, designs, manufactures, markets and services semiconductor test solutions. LTXX offers testers based on a single platform – the Fusion platform. The company’s target market is the makers of system-on-a-chip, or SOC, devices which combine digital, analog and memory circuitry on a single chip. Examples of SOC devices include chips for the automotive and wired and wireless communication markets made by companies such as Texas Instruments (TI), Infineon and ST Microelectronics.

Semiconductor testers are used in two stages of the chip production sequence. After wafer fabrication, testers are used to separate good chips from

defective ones, so that the good ones can be packaged. After packaging, the chips are again tested so that chips that suffered damage during the packaging process can be identified and discarded.

LTXX offers Fusion testers in two versions. The high-end Fusion HFi costs about \$2M and offers up to 1024 pins and digital testing at speeds up to 2.5 gigabits per second (Gbps). This version is aimed at testing high-performance devices such as TI's digital signal processor (DSP) chips. The low-end Fusion CX can accommodate up to 128 pins and costs about \$500K. These are used for testing high volume consumer electronics ICs such as MPEG decoder chips for set-top boxes.

LTXX's customers include integrated device manufacturers (IDMs) such as TI, who design, manufacture and test their chips, as well as subcontract test houses such as ASE Test and STATS, to whom fabless chip companies as well as IDMs outsource testing. Until a few years back, IDMs ordered high-end testers while the subcontractors bought the low-end testers. However, in the last few years, many IDMs have chosen to outsource some or all of their testing to test subcontractors. As a result, companies such as ASE Test and STATS have increased their purchases of high-end testers. An industry expert told us that in about 80% of the instances when IDMs outsource testing, they retain the right to dictate which tester should be used for testing their devices.

LTXX's primary competitors are Teradyne and Agilent. Agilent's testers, like those of LTXX, are based on a single platform – the 93K platform, while Teradyne offers multiple-platform solutions. At the high end, Teradyne's Tiger and Catalyst testers and Agilent's 93K P- and NP-model testers compete with the Fusion HFi. At the low end, the Fusion CX faces competition from Teradyne's Integra Flex and Agilent's 93K C-model testers. Credence's ASL3000RF tester is also a competitor to the Fusion CX.

According to Prime Research, Teradyne was the market share leader in the SOC tester market in 2002 (the most recent year for which data are available) with a 32% share, followed by Agilent at 19%, and NPTest (formerly part of Schlumberger) at 12%. According to Prime Research, LTXX's share has been constant at roughly 7% for the past few years (with one exception in 2000 that we discuss later). An industry source told us that the market-share division between the participants should be similar in 2003.

In FY 02, LTXX completed the outsourcing of tester manufacturing to Jabil Circuits to reduce its fixed-cost exposure to the semiconductor cycle and reduce working capital requirements. Since raw materials constitute the largest portion of

tester manufacturing costs (80% for the Fusion), LTXX perceives the outsourcing strategy as a way to take advantage of Jabil's buying power.

Discussion:

1. LTXX shares have gained 109% year-to-date versus 47% for the Philadelphia Semiconductor (SOX) index. Since last October's lows, LTXX shares have gained 304%, versus 103% and 62% for the SOX index and the NASDAQ, respectively. In particular, the stock price jumped 21% on August 28, 2003 after the company reported fiscal Q4 03 results. Among the factors that enthused the bulls were the sequential order growth of 26%, a \$2M upside in revenue and a penny upside in loss per share. In addition, management made some optimistic comments regarding tester utilization and quotation activity, promised that orders would pick up in the next quarter, and predicted a meaningful recovery starting later this year. Imbibing these observations and anticipating share gains in an improving semiconductor market, the bulls on the "street" raised their EPS estimates and target prices and reiterated their "buy" recommendations on the stock.

However, our research, which we discuss below, provided us with little reason to be optimistic about LTXX's prospects. In our opinion, the "street" bullishness on LTXX may be rooted in the hope that the company might match or exceed its 2000 bull market performance. In taking this stance, we think the bulls are ignoring LTXX's shaky fundamentals, which has created a good opportunity to sell shares.

2. More than half of LTXX's revenues are derived from TI. As a result, industry observers opine that LTXX's high-end HFi testers are tailored to TI's needs and this may make it difficult for the company to diversify its revenue stream.

Over the past four years, LTXX has become increasingly more dependent on TI for revenues (Table 1). In each of the conference calls over the past couple of years, LTXX management has reiterated its promise to win new 2-3 new customers each quarter and reduce its dependence on TI. The "street" has taken management at its word and has highlighted the promise of a more diversified customer base as one of the reasons for investing in LTXX shares. LTXX management has stated that the company has won 11 new customers each in F2002 and F2003, but as Table 1 shows, the customer composition data to date actually indicate that the revenue base is getting more concentrated.

Table 1: LTXX revenue dependence on TI

	F2000	F2001	F2002	F2003
TI % of revenue	19%	26%	45%	58%
TI revenue (\$000)	58,052	85,808	54,573	69,280
Non-TI revenue (\$000)	247,483	244,222	66,700	50,169
Total revenue	305,535	330,030	121,273	119,449

Source: Company reports

While management has attempted to explain these data by citing the 2-5 quarter sales cycle for testers, we think LTXX will continue to rely on TI for a significant portion of its revenues, even if there is an upturn in the sector. According to one of our sources, LTXX's testers did not have broad market appeal. In his view, LTXX was a TI-oriented company and LTXX's Fusion HFi tester was developed jointly with TI, reducing its attractiveness to other potential customers. While the company has announced deliveries of its low-end Fusion CX offering to other customers, a Fusion CX unit delivers only a quarter the revenue from a Fusion HFi unit, and will therefore have only a small impact in diversifying the company's revenue sources.

One of our sources also told us that LTXX had placed about ten Fusion CX testers at potential customers on a consignment basis, with payments due only after certain utilization milestones were met. On the FQ1 03 call, LTXX management indicated that consignment systems could account for as much as 10% of inventory, and up to half of finished goods inventory. It is not clear if LTXX is counting these potential customers in the customer wins it cites on conference calls.

2. Management and bullish investors claim that LTXX's single platform strategy has positioned the company to gain share. The opinions of industry insiders, and market share data do not appear to support the bulls' contention.

LTXX's management tells investors that the company is well positioned to benefit from a recovery in the semiconductor sector owing to its embrace of the Fusion single-platform strategy. According to management, customers can upgrade by purchasing just the required instrumentation, while keeping the same chassis and software development environment. This would reduce the customer's cost of test and induce companies to switch to the LTX Fusion platforms from competitive test platforms. Now, even if this theory were correct, it would mean that the installed base's new spending would be restrained, and growth would need to come disproportionately from new business, which would be a problem for LTXX.

Moreover, our conversations with industry sources do not bear the bull argument out. A contact at Agilent told us that, in his experience, most of the bake-offs at the mid- to high-end occur between the Agilent 93K and the Teradyne Catalyst/Tiger platforms. In his opinion, LTXX had been able to gain some share in 2000 as a result of long lead times on Agilent and Teradyne testers back then, but that customers had reverted back to ordering from the bigger players after the bubble burst in late 2000. He also indicated that Agilent encountered Credence occasionally as a competitor for design wins at the low-end, but LTXX rarely or never.

According to another industry expert, Agilent (the other single-platform company as noted previously) has indeed gained share, growing from 13% of the SOC market in 2000 to 18% in 2002. The market share data we cited earlier are consistent with what these sources told us. LTXX appears not only to have not gained share, but without the relatively constant revenue from TI (compared to the rest of its customers), it would actually have lost market share.

In Table 2, we compare LTXX's non-TI revenues and Teradyne's revenues for LTXX's past four fiscal years. We choose Teradyne for three reasons: it has a diversified customer base with no 10%+ customers, it is only in the non-memory test business like LTXX, and it breaks out revenue by tester group. Thus, we can perform an apples-to-apples SOC revenue comparison. This comparison demonstrates that after gaining share in F2001 as we indicated earlier, the company lost share of non-TI revenue slightly in F2002 and substantially in F2003.

Table 2: Comparison of LTXX's non-TI revenue and Teradyne's revenue

All data in \$ MM	F2000	F2001	F2002	F2003
LTXX non-TI revenue	247	244	67	50
Y/Y LTXX change		-1%	-73%	-25%
Teradyne semiconductor test revenue	1,736	1,574	427	672
Y/Y TER change		-9%	-71%	58%

Source: Company reports

We also note that the results from VLSI Research's 2002 customer satisfaction survey of test and material handling suppliers do not support management's optimism regarding share gain. LTXX ranked #10 in the survey, behind Credence (#1), NPTest (#3), Teradyne (#8) and Agilent (#9).

3. Comparative order trends show LTXX trailing Teradyne in new order growth.

In Table 3, we show LTXX and Teradyne semiconductor test orders over the past six quarters. Agilent, which also sells flash memory testers, does not break out its semiconductor test order data by type of tester, leading us to exclude that

company from the comparison. We note that Teradyne has seen a greater pickup in orders than has LTXX.

Table 3: LTXX and Teradyne order data

All data in \$MM	FQ3 02	FQ4 02	FQ1 03	FQ2 03	FQ3 03	FQ4 03
LTXX net orders	36.0	45.0	20.3	31.0	32.0	40.3
Q/Q change	24%	25%	-55%	53%	3%	26%
Teradyne net orders	89.6	138.9	123.4	128.6	151.9	186.4
Q/Q change	47%	55%	-11%	4%	18%	23%
Teradyne/LTXX orders	2.5	3.1	6.1	4.1	4.7	4.6

Source: Company reports

A source at Teradyne who told us that many customers did not consider a single platform solution to be the most efficient one for their needs. With a multiple platform supplier, a customer can obtain an optimal tester for its need. For example, Teradyne has two platforms: Catalyst and Integra Flex. The Catalyst platform, which is used for medium-to-high-end testing, employs workstations running the UNIX operating environment, and the pattern generators that generate the timing signals use high-performance silicon germanium (SiGe) chips. The cost of these testers is \$1.5M-\$3M. The Integra Flex testers on the other hand are used for high volume testing of consumer devices. They use Windows-based PCs and have the ability to test devices in parallel. According to our Teradyne source, depending on the configuration, an Integra Flex tester at \$250K can cost a customer 30%-50% less than a comparable Fusion CX, which is UNIX-based.

4. LTXX has touted the supposed technical superiority of its Fusion HFi and CX testers. Our sources tell us that while LTXX testers have some competitive characteristics, they lag the competition in other significant features.

In its press release announcing the Fusion HFi, LTXX said: “Fusion HFi offers a broad range of advanced capabilities, including 2.5 Gbps digital channels – 50% faster than its nearest competitor.” The competitor referred to in this statement is Terdayne’s Tiger, which comes with a base digital testing speed of 1.6 Gbps. However, LTXX’s statement is misleading since a customer interested in testing at higher speeds can obtain the Source Synchronous Pin Electronics (SSPE) option which doubles the digital rate to 3.2 Gbps. NPTest also offers a 3.2 Gbps test option, while Agilent offers a 2.5 Gbps rate on its NP-models. Corroborating our research is a recent Morgan Stanley trip report from Taiwan, which states that Teradyne’s Tiger and NPTest’s EXA3000 are getting the design wins for leading edge test applications there.

On its latest conference call, LTXX management claimed that the Fusion CX was gaining momentum and increasing its penetration of next generation

wireless LAN, automotive and smart power testing at subcontractors and fabless companies. However, the Fusion CX is limited to 128 pins, and is therefore not competitive with Credence’s Quartet, which has as many as 384 pins in a typical configuration. The Morgan Stanley trip report we cited earlier mentions that Agilent with its 93K C-models has had the best success with the Taiwanese subcontractors, and that Credence is also a strong player. The report also categorizes LTXX’s exposure to the Taiwanese subcontractor market as “limited”, despite purchases of a few Fusion CX testers by ASE Test. This is supported by the latest LTXX bookings data: 88% of bookings and 83% of sales in the latest quarter were from integrated device manufacturers (IDMs), mostly TI.

5. LTXX’s latest bookings and backlog numbers aren’t significantly different from FQ4 02 numbers. Yet the bulls assume an order take-off has commenced.

Table 4 shows LTXX bookings and backlog for the past nine quarters. We note that LTXX’s bookings in FQ4 03 were actually lower than bookings in FQ4 02, which was followed by the company’s lowest fiscal annual revenue in fifteen years.

Table 4: LTXX order data for the past nine quarters

All data in \$MM	FQ4 01	FQ1 02	FQ2 02	FQ3 02	FQ4 02	FQ1 03	FQ2 03	FQ3 03	FQ4 03
Product orders		14.6	22.3	29.6	41.4	12.2	17.4	28.8	36.3
Services orders		3.7	13.7	8.4	4.6	8.1	13.6	3.2	4.0
Total orders	28.3	18.3	36.0	38.0	46.0	20.3	31.0	32.0	40.3
Cancellations	1.6	3.5	6.9	2.0	1.0	0.0	0.0	0.0	0.0
Net orders	26.7	14.8	29.1	36.0	45.0	20.3	31.0	32.0	40.3

Source: Company reports

Similarly, LTXX’s backlog, about half of which is shippable over the next six months, was slightly less at the end of FQ4 03 than it was in FQ4 02 (Table 5). Therefore, we are skeptical of the bulls’ proclamations that orders have nowhere to go but up from here. We note that at a Bank of America conference last week, Teradyne said that September quarter orders for testers are showing signs of weakness.

Table 5: LTXX backlog data for the past nine quarters

All data in \$MM	FQ4 01	FQ1 02	FQ2 02	FQ3 02	FQ4 02	FQ1 03	FQ2 03	FQ3 03	FQ4 03
Beginning backlog	184.4	145.6	130.7	130.3	138.2	81.2	71.2	75.2	78.4
Bookings	28.3	18.3	36.0	38.0	46.0	20.0	31.0	32.0	40.3
Cancellations	1.6	3.5	6.9	2.0	1.0	0.0	0.0	0.0	0.0
Adjustments (backlog scrub)	0.0	-3.3	1.9	0.0	69.4	0.0	0.0	0.0	5.9
Net orders	26.7	18.1	27.2	36.0	-24.4	20.0	31.0	32.0	34.4
Shipments	65.5	33.0	27.6	28.1	32.6	30.0	27.0	28.8	33.7
Ending backlog	145.6	130.7	130.3	138.2	81.2	71.2	75.2	78.4	79.1

Source: Company reports, OWS estimates

We also note in Table 4 that LTXX had to scrub its backlog by \$69M in FQ4 02 because customers who had booked these orders at the end of the 2000 boom showed no indication of taking delivery of testers. This could easily be repeated if the current semiconductor euphoria leads to an inventory glut.

6. LTXX announced FQ4 03 results on August 27. The company's cash balance and book value declined significantly Y/Y.

LTXX posted FQ4 03 revenue of \$33.6M (up 3% Y/Y), and loss per share of \$1.61, down from a loss per share of \$1.84 a year ago. The company wrote off \$48.5M of inventory during the quarter, related to the transition from the Fusion HF tester to the new Fusion HFi tester. About two-thirds of the inventory reserve was raw materials related. Excluding this reserve, loss per share after tax benefit was \$0.19, compared to loss per share of \$0.23 a year ago. FY 03 represented the third consecutive year of inventory write-offs. LTXX wrote off \$42.2M in FY 02 and \$12.8M in FY 01.

LTXX's cash on hand on July 31, 2003 was \$136.6M, down \$80.6M from \$217.2M a year ago. We estimate that the company consumed \$105M of cash during FY 03, the eighth consecutive year of negative free cash flow. Book value was \$2.02, down 56% from \$4.55 a year ago. Tangible book value was \$1.67 at the end of FY 03.

7. Financial assumptions.

a. Revenue.

LTXX has guided to revenue of \$37M-\$40M in FQ1 04, and management estimates that the book-to-bill ratio will be at least 1.0 in that quarter, implying an order level of \$39M+, and a backlog of \$79M+, flat to slightly up Q/Q. LTXX has said that in recent quarters, about 50% of a quarter's backlog is shippable in the

next two quarters. LTXX's turns business, which can vary between 25% and 50% of revenues, will be at the lower end of the range in FQ1 04, according to management. We estimate that LTXX will ship \$42M in FQ2 04, which ends in January 2004. Thus, our calendar 2003 revenue estimate for LTXX is about \$140M.

To model LTXX revenue in calendar years 2004 and 2005, we examined the projected spending plans of TI, LTXX's key customer, LTXX's revenue recovery in past cyclical upturns, and industry forecasts for the ATE sector. With regard to TI's spending projections, the company forecast that capital expenditures in 2003 would be flat Y/Y at about \$800M. While the company has not projected capital expenditures in future years, "street" analysts following the company have estimated 2004 capex to be \$900M-\$1B (or up 25% at best from 2002 and 2003 levels). There are no projections for 2005.

In Table 6, we show LTXX's revenue from TI as a fraction of TI's capex for the past four fiscal years. We note that this metric was highest in FY 03 at 9%.

Table 6: LTXX's TI revenue as a fraction of TI capex

	F2000	F2001	F2002	F2003
TI contribution to LTXX revenues	19%	26%	45%	58%
LTXX revenue from TI (\$ MM)	58,052	85,808	54,573	69,280
TI capex (\$ MM)	2,085,000	2,800,000	845,000	799,000
LTXX's TI revenue as % of TI capex	3%	3%	6%	9%

Sources: Company reports, OWS estimates

If we assume that TI's capex grows 25% Y/Y in 2004 (the highest analyst estimate) and another 25% Y/Y in 2005, our 2005 estimate for TI's capex is \$1.25B. Further, if we assume that 10% of TI's capex will go towards buying LTXX testers in calendar years 2004 and 2005, and that TI will be 50% of LTXX's revenues for each of those years, we estimate that LTXX revenues for calendar years 2004 and 2005 would be \$200M and \$250M, respectively.

In Table 7, we show LTXX's Y/Y revenue change for the past twelve years. The average revenue increase during upturns is 43%, a number boosted primarily by the 1999-2000 boom figures.

Table 7: Calendar 1991-2002 Y/Y LTXX revenue change

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Sales (\$ MM)	173	180	152	181	180	241	231	212	148	227	373	193	118
Y/Y change		4%	-15%	19%	-1%	34%	-4%	-8%	-30%	54%	65%	-48%	-39%

Source: Company reports

From an industry perspective, Dataquest expects the chip tester business to grow 55% and 61%, respectively, in calendar years 2004 and 2005. If we assume again that TI will be 50% of LTXX revenues in calendar years 2004 and 2005, that TI revenues will grow 25% in each of those years, and that the remainder of LTXX's business grows at Dataquest forecasted rates, we project LTXX's calendar year 2004 and 2005 revenues to be \$200M (up 43% Y/Y) and \$280M (up 40% Y/Y).

Based on the above analysis, we forecast that LTXX's sales in calendar 2004 will be \$208M (up 46% Y/Y). Due to the uncertainty involved in the calendar 2005 estimates, we forecast that LTXX's revenues will be up a similar level, \$307M (up 48% Y/Y). We point out that our assumptions are higher than the average 43% revenue increase seen by LTXX during previous upturns. "Street" estimates for calendar 2004 are \$243M, but are not available for 2005.

b. Gross Margin.

According to management, LTXX's quarterly gross margins at the peak of the next cycle could be in excess of 50%, higher than the 48% peak reported by the company in 2000 when the quarterly revenue run rate was \$80M+. To date, as Table 8 shows, the outsourcing has not helped LTXX's gross margins because of the low volume of orders - the few testers ordered have consumed LTXX's existing inventory.

Table 8: LTXX gross margins since implementation of SAB 101

	FQ2 02	FQ3 02	FQ4 02	FQ1 03	FQ2 03	FQ3 03	FQ4 03
Net Sales	27,585	28,055	32,630	30,007	27,011	28,777	33,654
Gross Margin	16.1%	17.0%	19.8%	17.7%	17.2%	18.4%	20.3%

Source: Company reports

To estimate changes in LTXX's gross margins at the top and bottom of the cycle, we broke down manufacturing cost into its components. In connection with the launch of the Xbox, Flextronics detailed the financial advantages accruing to OEMs when they outsource manufacturing of electronics (Table 9). We adapted those numbers to calculate LTXX's gross margins. For example, in its FY 01 Form 10-K, LTXX reported that it had let go 120 employees in connection with the transition to Jabil. We used this information, in conjunction with LTX's COGS at the top and bottom of the current cycle, to determine LTXX's assembly labor cost as shown in Table 10.

Table 9 – The advantage of outsourcing an electronic part to Flextronics

Production Cost Category	OEM cost (\$)	Flextronics cost (\$)	Savings (\$)
Materials	76	68	8
Factory overhead	8	4	4
Assembly labor	4	1	3
SG&A	6	3	3
Freight costs	4	3	1
Finance (inventory) costs	2	1	1
Flextronics pretax profit		4	-4
Total	100	84	16

Source: Wired magazine (November 2001)

Table 10 – Assembly labor cost fraction estimation

Assumed average annual employee compensation (including benefits) = \$60,000

Total assembly labor costs = 120*60,000 = \$7.2 million

	COGS (\$ MM - annualized quarterly number)	Assembly & labor costs as % of COGS	COGS as % of sales	Assembly & labor costs as % of sales
Cycle peak	200	4	52	2
Cycle trough	90	8	84	7

Sources: LTXX 10-K and 10-Q filings

We modeled the savings (Table 11) and estimate that LTXX’s gross margin will range from 37% (at the trough of the cycle) to 45% (at the peak). We spoke with a knowledgeable industry source, who agreed with our logic, and thought that our final estimates were reasonable.

Table 11 - LTX gross margin estimate

COGS component (% of sales)	Cycle peak		Cycle trough	
	LTX in-house	Outsourced	LTX in-house	Outsourced
Materials	44%	41%	60%	50%
Factory overhead	3%	3%	8%	3%
Assembly labor	2%	1%	7%	2%
Inventory financing costs	1%	1%	5%	1%
Freight	2%	2%	4%	2%
Jabil profit		7%		5%
Total	52%	55%	84%	63%
Gross margin	48%	45%	16%	37%

Sources: Company reports, industry sources, OWS estimates

Our gross margin assumptions are also consistent with management guidance that LTXX would be GAAP breakeven at around \$55M of quarterly revenue, and would achieve EBITDA breakeven at about \$45M of quarterly revenue.

c. Other expenses.

At the end of FY 02, LTXX had 830 employees. The company reduced its workforce in August 2002 and again in November 2002 by a total of 35%, and has said that these actions would lower annual operating expenses by \$24M. Of the 289 employees terminated, 255 belonged to production and engineering, and 34 to SG&A.

LTXX has reduced its product development expenses to \$15M-\$16M per quarter. Given that the company has recently introduced the new Fusion HFi, we expect that most of the product development expenses in the next couple of years will be for upgrades. Therefore, we estimate that these expenses will be \$15.5M until the end of FY 05.

The company's SG&A expense as a percentage of sales was 11% during the peak of the last cycle. In the last reported quarter (FQ4 03), this figure was 19%. While we expect the absolute SG&A dollars to increase with sales, we estimate that LTXX will be able to restrain the SG&A expense to 10% of sales by the end of FY 05.

LTXX has \$150M in 4.25% convertible notes due in 2006. The conversion price is \$29.04. We estimate that the company will continue to burn cash through the end of FY 04. LTXX had \$763M in net interest expense in FQ4 03, which we project will increase to \$790M by the end of FY 04. In FY 05, we estimate that net interest expense will decrease slightly as the company regains profitability.

d. Tax Rate.

The company has indicated that it will report results on a GAAP basis. Therefore, per company guidance, we assume no tax benefits for fiscal quarters with losses and a 40% tax rate for profitable fiscal quarters.

8. Valuation.

Our estimates for revenue and EPS for FY 04 and FY 05 versus those of the "street" are shown in Table 12. The primary reason for the difference in EPS is the difference in revenue estimate. We note that some "street" analysts assume that calendar 2004 revenue for LTXX will be up almost 70% Y/Y, well above Dataquest's forecast of 55%.

Table 12: Comparison of OWS and “street” estimates of LTXX financial results

	“Street” estimate	OWS estimate
FY 04 revenue (\$ MM)	199.4	176
FY 04 EPS (\$)	(0.45)	(0.60)
FY 05 revenue (\$ MM)	290.9	249
FY 05 EPS (\$)	0.44	0.20

Sources: OWS estimates, “street” reports

As Table 13 shows, LTXX shares are more highly valued on price to sales and price to book bases than those of its competitors. (We did not include trailing P/E ratios since all ATE companies are currently losing money.) Given our discussion earlier on LTXX’s competitive position in the market, we think such a premium is unwarranted. We also note from the table that LTXX’s balance sheet is weaker than those of its competitors.

Table 13: Comparison of valuations for LTXX and competitor valuations

	Price to trailing twelve-month sales	Price to book	Price to tangible book	Debt to equity	Net cash (debt) (\$ MM)
LTXX	5.4	6.2	7.5	167.4%	(34.2)
Teradyne	2.7	3.8	4.8	48.3%	73.7
Credence	4.4	1.6	2.0	40.0%	176.6

Sources: Company reports

The NASDAQ is trading today at 40X estimated earnings, 2.3X trailing sales and 3.5X book. Based on these metrics, our estimated values of LTXX shares based on FY 05 financial results are \$8, \$11.08 and \$5.67, respectively. The average of the values is \$8.25. Discounting this value to the present using LTXX’s 13.58% weighted average cost of capital, we estimate the fair value of the shares to be \$6.40. We’ll place an initial target of \$7 on the shares. Note that since LTXX has not generated free cash in eight years, including at the peak of the Internet boom, we do not attempt to value shares on that basis. We note that in terms of multiples of earnings for the period corresponding to LTXX’s FY 05, Teradyne trades at 25X “street” consensus, compared to 29X for LTXX.

9. Insider Selling.

Insiders, who hadn’t sold shares since May 2002, when the stock price was \$19.11, recently sold 79,500 shares at prices between \$15.10 and \$15.74. The CEO (also the Chairman of the Board) sold 45,000 shares, a director sold 30,000, and a vice-president sold 4,500. If the future were as rosy as the bulls predict, why would these insiders capitalize on the opportunity to sell shares at \$15?

10. Financial Projections.

a. Quarterly estimates.

	<u>FQ104E</u>	<u>FQ204E</u>	<u>FQ304E</u>	<u>FQ404E</u>	<u>FQ105E</u>	<u>FQ205E</u>	<u>FQ305E</u>	<u>FQ405E</u>
Net Sales	38,000	42,000	46,000	50,000	54,000	58,000	65,000	72,000
Cost of Sales	28,120	28,980	29,440	30,000	30,780	32,480	35,750	39,600
Inventory Provision	-	-	-	-	-	-	-	-
Prod Dev	15,500	15,500	15,500	15,500	15,500	15,500	15,500	15,500
SG&A	6,250	6,300	6,350	6,400	6,600	6,800	7,000	7,200
IPRD	-	-	-	-	-	-	-	-
Reorganization	-	-	-	-	-	-	-	-
Operating Expense	49,870	50,780	51,290	51,900	52,880	54,780	58,250	62,300
Operating Income	(11870)	(8,780)	(5,290)	(1,900)	1,120	3,220	6,750	9,700
Net Interest Inc (Exp)	(775)	(780)	(785)	(790)	(785)	(780)	(775)	(770)
Income Before Taxes	(12645)	(9,560)	(6,075)	(2,690)	335	2,440	5,975	8,930
Income Taxes	-	-	-	-	134	976	2,390	3,572
Net Income	(12645)	(9,560)	(6,075)	(2,690)	201	1,464	3,585	5,358
Diluted Shares	51,700	51,850	52,000	52,150	52,300	52,450	52,600	52,750
Diluted EPS	(0.24)	(0.18)	(0.12)	(0.05)	0.00	0.03	0.07	0.10

Y/Y change

	<u>FQ104E</u>	<u>FQ204E</u>	<u>FQ304E</u>	<u>FQ404E</u>	<u>FQ105E</u>	<u>FQ205E</u>	<u>FQ305E</u>	<u>FQ405E</u>
Net Sales	27%	55%	60%	49%	42%	38%	41%	44%
Cost of Sales	14%	30%	25%	12%	9%	12%	21%	32%
Inventory Provision	n/a	n/a	n/a	-100%	n/a	n/a	n/a	n/a
Prod Dev	-19%	-3%	1%	-1%	0%	0%	0%	0%
SG&A	-2%	-16%	-12%	3%	6%	8%	10%	13%
IPRD	n/a	n/a	n/a	-100%	n/a	n/a	n/a	n/a
Reorganization	-100%	-100%	n/a	-100%	n/a	n/a	n/a	n/a
Operating Expense	-4%	3%	11%	-55%	6%	8%	14%	20%
Operating Income	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Net Interest Inc (Exp)	56%	53%	13%	4%	1%	0%	-1%	-3%
Income Before Taxes	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Income Taxes	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Net Income	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Diluted EPS	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

As % of sales

	FQ104E	FQ204E	FQ304E	FQ404E	FQ105E	FQ205E	FQ305E	FQ405E
Net Sales	100%	100%	100%	100%	100%	100%	100%	100%
Cost of Sales	74%	69%	64%	60%	57%	56%	55%	55%
Inventory Provision	0%	0%	0%	0%	0%	0%	0%	0%
Prod Dev	41%	37%	34%	31%	29%	27%	24%	22%
SG&A	16%	15%	14%	13%	12%	12%	11%	10%
IPRD	0%	0%	0%	0%	0%	0%	0%	0%
Reorganization	0%	0%	0%	0%	0%	0%	0%	0%
Operating Expense	131%	121%	112%	104%	98%	94%	90%	87%
Operating Income	-31%	-21%	-12%	-4%	2%	6%	10%	13%
Net Interest Inc (Exp)	-2%	-2%	-2%	-2%	-1%	-1%	-1%	-1%
Income Before Taxes	-33%	-23%	-13%	-5%	1%	4%	9%	12%
Income Taxes	0%	0%	0%	0%	0%	2%	4%	5%
Net Income	-33%	-23%	-13%	-5%	0%	3%	6%	7%

b. Annual estimates.

	F2002	F2003	F2004E	F2005E
Net Sales	121,273	119,449	176,000	249,000
Cost of Sales	96,006	97,368	116,540	138,610
Inventory Provision	42,200	48,483	-	-
Prod Dev	71,102	66,088	62,000	62,000
SG&A	28,337	27,321	25,300	27,600
IPRD	-	16,100	-	-
Reorganization	-	6,696	-	-
Operating Expense	237,645	262,056	203,840	228,210
Operating Income	(116,372)	(142,607)	(27,840)	20,790
Net Interest Inc (Exp)	215	(2,461)	(3,130)	(3,110)
Income Before Taxes	(116,157)	(145,068)	(30,970)	17,680
Income Taxes	33,723	-	-	7,072
Net Income	(149,880)	(145,068)	(30,970)	10,608
Diluted Shares	48,693	49,614	51,925	52,525
Diluted EPS	(3.07)	(2.90)	(0.60)	0.20

Y/Y change

	F2002	F2003	F2004E	F2005E
Net Sales		-2%	47%	41%
Cost of Sales		1%	20%	19%
Inventory Provision		15%	-100%	n/a
Prod Dev		-7%	-6%	0%
SG&A		-4%	-7%	9%
IPRD		n/a	-100%	n/a
Reorganization		n/a	-100%	n/a
Operating Expense		10%	-22%	12%
Operating Income		n/a	n/a	n/a
Net Interest Inc (Exp)		n/a	27%	-1%
Income Before Taxes		n/a	n/a	n/a
Income Taxes		-100%	n/a	n/a
Net Income		n/a	n/a	n/a
Diluted EPS		n/a	n/a	n/a

As % of sales

	F2002	F2003	F2004E	F2005E
Net Sales	100%	100%	100%	100%
Cost of Sales	79%	82%	66%	56%
Inventory Provision	35%	41%	0%	0%
Prod Dev	59%	55%	35%	25%
SG&A	23%	23%	14%	11%
IPRD	0%	13%	0%	0%
Reorganization	0%	6%	0%	0%
Operating Expense	196%	219%	116%	92%
Operating Income	-96%	-119%	-16%	8%
Net Interest Inc (Exp)	0%	-2%	-2%	-1%
Income Before Taxes	-96%	-121%	-18%	7%
Income Taxes	28%	0%	0%	3%
Net Income	-124%	-121%	-18%	4%