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REPORT

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Time to bet against Qualcomm?...

With five new patents for its portfolio of highly linear and adjustable power amplifiers for new wireless applications, Anadigics is gaining a significant edge in the field.

Inside:

Keeping up with a multipronged paradigm is tough. Ever since Telecosm number 9, we've been pumped up about our 10th Annual Telecosm Gala (next month in Lake Tahoe, see *www.TelecosmConference.com*). Forget the *GTR*; we are party animals at heart, learning technology osmotically, as we carouse with the philosopher-techies gathering among all the widescreen TVs in the Bullwacker's Lounge at the Resort at Squaw Creek.

But at the same time, we have had to keep up with the Googleplex for *Wired* magazine (see the October 2006 issue) and with *Life After Television* and—for our faithful subscribers—the hollowing out of the network for network processors. This yielded us EZchip and its LNOP shares, which are approaching takeoff after some 90 design wins, **Finisar** (FNSR) flourishing with its 10 Gigabit per second optics, and **Sigma Designs** (SIGM) and **Zoran** (ZRAN) which are popularizing our old

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Imbroglio Investing: Zoran (ZRAN) and Sigma Designs (SIGM)

The supreme buy signal of "blood in the streets" beckons us to examine two *GTR* companies. We're not talking about the war with Hezbollah or Osama. It's combat with the local constabulary that seems to be consuming some of our companies. Our advice: Don't get distracted by the march of muckrakers. Instead, listen to the technology and play the paradigms. We can't forecast the outcome of furtive options probes, but we can detect when a company is realigning itself inside or outside the telecosm.

Boomtown

A fabless designer of media chips, Israeli-based **Zoran** (ZRAN) was bombed twice early in July, prior to the Hezbollah hostilities. In one day the company received a grand jury subpoena from the U.S. attorney for northern California, and the SEC began an "informal" inquiry. Boom, boom. A third hit came for investors later in July when Zoran released an abbreviated second quarter report with full financials to follow pending the outcome of an internal review of stock options practices. The review is still in progress and for now we must live with the company's paltry disclosure that quarterly revenue rose to $122.3m excluding litigation proceeds and that cash and investments came to $265m. Product and sales trends were also highlighted.

The day after the abbreviated second quarter report, Zoran sank like a stone. Already down by a third from its high near $30 in April, the stock dove over 25% to $14.14 during the first half hour of trading. You'd have thought the company's research center in Haifa had taken a direct Hezbollah hit. The straw that broke Zoran's back may have been a projected third-quarter revenue rise that likely looked low-cal to growth-hungry traders. With essentially no quarterly financial data to go on … with the feds and the SEC firing at once … with uncertainty over past financials … and with no one to talk to, Zoran quickly became Noran.

We have no special insight into how Zoran will fare in the options war. But the second-quarter press release gave us no reason to believe that Zoran is faltering, despite the distractions. Sales increased 29% over the year-ago quarter and 9% sequentially (significantly faster than the forecast

6%) driven by sales into the emerging markets for digital cameras and digital TV as well as DVDs. And the strong balance sheet is getting stronger.

Management expects another 8% sequential revenue rise this quarter. But it's usually Zoran's strongest quarter and an already spooked Street isn't happy. Consider, however, that if the company had merely met second quarter guidance, it would be predicting a better 11% sequential rise for the third quarter, with no difference in the end result. After the April call, we estimated earnings for this year of $1.12 (up 84% over 2005) based on the assumption that sales would rise 6% this quarter and then *remain steady* the rest of the year. Clearly the company has exceeded that scenario. Yet when it bottomed-out at $13.69 in July, the stock was trading at a pitiful PE multiple of 12x the conservative and now outdated $1.12 estimate.

Zoran has recovered some since and now trades around $16, still a meager 14.3x our low-ball forward earnings. Yet the company continues to ascend rapidly into the emerging digital-media markets for cameras, handsets, TVs, DVDs, and printer imaging. At the Photo Marketing Show last spring, Zoran powered over 90 new digital-camera products from companies such as **Samsung**, **Pentax**, and **Kodak** (EK).

Long-term, probably more important than Zoran's skirmish with regulators is its battle with competitors, and savvy investors will keep a keen eye on formidable competitors **Texas Instruments** (TXN), **Broadcom** (BRCM), **STMicroelectronics** (STM), and **Trident Microsystems** (TRID) while putting options on the backburner.

While Wall Street looks for a landmine, Zoran at these prices could well turn into a gold mine.

March of the Margin Brigade

Can **Sigma Designs** (SIGM) retake 50% gross margins? CEO Thinh Tran says yes, but the battle back will probably be harder for him than settling his options war. Buoyed by burgeoning sales of media processors into IPTV set-top boxes, Sigma's top line bulged 36% sequentially during the second quarter. No surprise to *GTR* subscribers, the blowout results reflected Sigma's saturation of the market combined with accelerating deployments of IPTV by telcos following major broadband rollouts. As we've been preaching for the better part of a year, by plunging into the market early and putting all the various standards on one chip, Sigma achieved a real edge against Broadcom, TI, **Intel** (INTC), and others, who assumed they could wait until standards were settled.

To date, Tran has encountered STMicro as the only competitor—barely worth a mention—in set-top boxes. And in the Blu-ray market, only Broadcom shows up. During the next three months, several manufacturers are planning to launch Blu-ray players running on Sigma processors. Expect "meaningful" shipments during the holidays and "substantial volume" next year as Tran adds another revenue ramp parallel to his set-top run.

Building on its Blu-ray incursions into many of the world's major consumer electronics firms, Sigma expects that in the future those companies will design its chips into scores of other products. Meanwhile, Sigma will begin to leverage its Blue7 acquisition this fall as it samples its first ultra-wideband products to be followed by volume shipments next year. Other market segments are also showing signs of strength, notably chips for handheld portable media players, which contributed to 20% of sales in the quarter.

With cash and receivables increasing $2.2m sequentially to $35.6m, Sigma is showing signs that it has the financial and managerial resources to handle surges and swells without getting tossed back to Wall Street. On the foundry side, supplier Taiwan Semiconductor assures Sigma that its fab is ready to roll.

By now you might be wondering if Tran leads a charmed life. We hope he does, because looming is his company's confessional on past stock option grants. With the internal inquisition ongoing, Tran could only blow smoke signals about second-quarter expenses and earnings, and he may miss the regulatory deadline for filing his quarterly report. Also giving Tran options reflux are the SEC, with an inquiry of its own, and a shareholder lawsuit.

However, unless Tran and company are crooks, we believe that the options mess will turn out to be a red herring for long-term holders of this stock. Of much greater concern is gross margin, which continues to lag expectations. In May, Tran projected about 49% for the second quarter and a slow return to the low 50s during the last half of the year in response to a potpourri of planned cost reductions and predicted product mix. What we got instead was 46% last quarter (if we read the smoke signals right) and a gradual return to 50% early next year.

Looking back, operating income has lagged accelerating top-line growth over the past year as gross margin plunged from 69 to 46% under the pressure of volume pricing. But volume pricing means volume orders with sticky customers. Thus, paramount is Sigma's ability to build on its runaway technology lead and thus continue its sales crescendo through next year and beyond. If we restrict our horizon to the fiscal year ending next January, we find that the stock isn't cheap—even using generous projections.

Based on inventory builds and management's ruminations on product and sales activities, we anticipate another 30% sequential sales swell this quarter, despite Tran's 15% forecast, followed by a 10% increase in post-holiday January. That catapults revenue for fiscal 2007 to $90m, a whopping 3x fiscal 2006 sales of $33m. Granting management's latest gross margin and expense guidance (ex options expense), earnings are on track to reach $0.40 per share this year as this quarter's $0.05 grows to $0.20 by January. At the recent price of $15, that gives the stock a strong forward PE of 38.

But if Tran fends off STMicro, Broadcom, and others; bursts open Blu-ray and Blue7; and keeps on funding the future using cash flow from operations, revenue could reach $185m next year (based on quarterly revenue rises of 10%, 30%, 30%, and 10%) with earnings of $1.80 for a stock price of $54 at a PE of 30.

And what about life after television in 2008?

Before you celebrate, don't forget Tran's formidable problems. Plummeting gross margin indicates that competition must already be knocking, though faintly. Also, be on the lookout for signs that Sigma's margin problem stems from management missteps. If the company can't cope with explosive growth, margins could fall further, necessitating a plunge back into the market for cash, something we don't currently anticipate. Keep the faith, but also keep your eye on the competition, the balance sheet, and the consumer.

— Charlie Burger

(CONTINUED FROM PAGE 1)

friend the media processor at last. (Remember John Moussouris and **MicroUnity** back in 1993?) TV is finally being fitted out for IP and Ethernet by **Cisco** (CSCO), **Juniper** (JNPR), **Microsoft** (MSFT), and **Alcatel** (ALA) and IPTV is bringing together all these players with **Verizon** (VZ) and **AT&T** (T). It has also brought us **Corning** (GLW) with its dominance of both the display and fiber markets and even **Broadwing** (BWNG) with its increasing role in video transport. But despite all the technical progress, these stocks do not yet rate with football games in inciting uproar at Bullwackers.

Ten years ago, in the heat of Palm Springs, where we held our first Telecosm with Forbes in the Ritz at Rancho Mirage, I certainly thought this paradigm would be fully fledged and in flight long before now. As a reader of Geoffrey Moore I knew about the need to "cross the chasm." But in the gilded glow of our nimbus at the Rancho Mirage, I apparently imagined we could cross it by a sufficiently vigorous waving of arms at the podium. Geoffrey did not explain that the crossing would entail portage down through the underbrush and quicksands in the pit of the canyon, where there would be no cell phone service or other communications, and Elliott Spitzer, Rudy Giuliani and the rest of the constabulary would be waiting with subpoenas.

In any case, many of our surviving vessels have been on "ground hold" for 10 years while the bathrooms clog up and the air conditioning shorts out, and the pilots make announcements about their eminent position in the Telecosm queue. In Palm Springs, **Qualcomm** (QCOM) was our top choice, with its venerable co-founder Andrew Viterbi our chosen speaker, and I assumed that soon enough it would combine with Globalstar, which was represented in Palm Springs by chief architect Ming Louie, in a new planetary empire of code division multiple access (CDMA). But Irwin Jacobs of Qualcomm and Bernie Schwartz of **Loral** could never get together on price and Qualcomm decided it did not need a retail CDMA satellite backup. It shunned Globalstar and hired Ming Louie to run Qualcomm's marketing in China. That's why a decade later Verizon and **Sprint Nextel** (S) service still are pocked with deadspots and the inferior GSM (global system for mobile) is the only truly global system. Also at Palm Springs, **Texas Instruments** (TXN) was showing off their microelectronic machines (MEMS) based digital light processing technology on all our conference screens. It is flourishing today but it has been a long climb. John Doerr celebrated the stunning creation of value by the PC industry, Mary Meeker touted the opportunities on the net, and Michael Milken explained the failure of stock market values to address the worth of intellectual capital. But none of these heraldic alerts intimated the likelihood of a crash four years hence.

Telecosmic time travel

Also on board for Telecosm 1997 was Marc Andreessen, letting Microsoft's Mark Ryland crush him in a debate on Java. (We were bailed out by the now notorious Patrick Naughton, then a sagely articulate Java manager at Sun, who stood up in the audience and gave a rebuttal.) Scott McNealy was also in Palm Springs, hilariously castigating Microsoft without necessarily convincing anyone that **Sun** (SUNW) could prevail. Fresh from Sun, Eric Schmidt described the road ahead for **Novell** (NOVL) in an age of the hollowing out of computers. Peter Cochrane of British Telecom discoursed on time travel through fiber technology, David Patterson, Leonard Kleinrock, and Schmidt held a summit conference on the future of computer architecture, and Bob Metcalfe laid down the law and the prophets and denounced Internet access over dialup modems. ("It is stupid and the modems know it's stupid; you can tell by the way they hiss and squeal every time they are made to do it.")

Attending Telecosm Ten, October 4 – 6 in Lake Tahoe, will be an experience in time travel. You will find many of the same guys still on the runway ready for you to get on board for a takeoff that now is underway for real.

Meanwhile, though, our old standby, the wireless industry, seems to be slipping away from us. For one thing, we can't keep track of our power supplies. We find ourselves juggling several, just to run cell phones, Treos, Blackberries, and notebooks. So to get wirelessly powered, we turn to **Mobility Electronics** (MOBE) with its iGo product, tabs for every power supply, offering fast power, slow power, and ready on-the-go power. Now we're set for a multi-pronged paradigmatic Telecosm and interested readers might contemplate a small investment in MOBE.

Q deja views

But what's this with Qualcomm? Losing to GSM again, so they say? That's what they were saying back in 1997 (before its 2600 percent stock ascent). Amazing that the company is still in business at all.

TELECOSM TECHNOLOGIES

Advanced Micro Devices	(AMD)
Altera	(ALTR)
Anadigics	(ANAD)*
Analog Devices	(ADI)
Broadcom	(BRCM)
Broadwing	(BWNG)
Cepheid	(CPHD)
Corning	(GLW)
Energy Conversion Devices	(ENER)
Equinix	(EQIX)
Essex	(KEYW)
EZchip	(LNOP)
Finisar	(FNSR)
Flextronics	(FLEX)
Ikanos	(IKAN)
Intel	(INTC)
Microvision	(MVIS)
National Semiconductor	(NSM)
NetLogic	(NETL)
PMC-Sierra	(PMCS)
Power-One	(PWER)
Qualcomm	(QCOM)
Semiconductor Manufacturing International	(SMI)
Sigma Designs	(SIGM)
Semitool	(SMTL)
Sprint Nextel	(S)
Synaptics	(SYNA)
Taiwan Semiconductor	(TSM)
Texas Instruments	(TXN)
Xilinx	(XLNX)
Zoran	(ZRAN)

*Added this month

Note: The Telecosm Technologies list featured in the Gilder Technology Report is not a model portfolio. It is a list of technologies that lead in their respective application. Companies appear on this list based on technical leadership, without consideration of current share price or investment timing. The presence of a company on the list is not a recommendation to buy shares at the current price. George Gilder and Gilder Technology Report staff may hold positions in some or all of the stocks listed.

Anadigics (ANAD)

PARADIGM PLAY: ADJUSTABLE LOW-POWER AMPLIFIERS

SEPTEMBER 12: 8.47; 52-WEEK RANGE: 2.85 – 9.26; MARKET CAP: 400.12M

Added to the Telecosm Technologies list this month.

Synaptics (SYNA)

PARADIGM PLAY: ANALOG-DIGITAL INTERFACES FOR HAPTICS

SEPTEMBER 12: 25.58; 52-WEEK RANGE: 17.00 – 31.34; MARKET CAP: 638.68M

TOO MUCH LINEARITY. Dominating the PC touchpad market, Synaptics is a primarily analog company with roots reaching back twenty years when Carver Mead showed the way to create analog systems that scaled like digital systems in accord with Moore's law. The company made little progress until the mid-1990s when, as a result of ingenious mixed-signal inventions by Mead student Tim Allen, a breakthrough came in the realm of touch.

So superior were the company's touchpads that they quickly took over the industry. Unlike rivals **Logitech** (LOGI) and **Alps**, Allen used a capacitive sensing pad rather than a resistive pad to identify the placement of the finger. A patented analog converter can locate the capacitance aroused by the finger on the pad to an accuracy of around 25 microns, or a quarter of the width of a human hair. Synaptics's superior pads came down in price to the point that rival Logitech exited the business, and the company's touchpads now go into more than half of the world's laptops.

Fresh in many investors' minds is the "Apple Affair." Almost two years ago, **Apple** (AAPL) propelled Synaptics forward with its famous iPod scroll wheel, only to reverse course six months later, replacing Synaptics touchpads on some lines of notebooks and iPods. As a result, Synaptics's fiscal year 2006 (ending in June) sales slid 11% from the prior year, earnings fell to $0.85 per diluted share from $1.23, and Wall Street sliced the company's market cap in half.

Discounting the Apple spike of 2005, Synaptics's sales have been climbing linearly since 2003, a sign of decelerating momentum. Though laptops have been gaining share in the global PC market, rising to a third of shipments last year from just under a quarter in 2000, the concurrent ascent of touchpad shipments has been too weak to sustain Synaptics's forward speed. To rejuvenate the company, management has been organizing an invasion of the huge markets for teleputer sensors and imagers.

The relentless march of digital media into home entertainment and portables plays into Synaptics's strengths. Synaptics's touchpads are perhaps even more advantageous in small mobile devices than in the conventional PC market where they have been so successful. The technology is just 0.15 millimeters thick compared to one to several millimeters for competitive solutions. Key to touch-sensitive LCD screen applications, Synaptics arrays are also more transparent, transferring 98% of the light to the user.

Synaptics hopes to put its capacitive touch interfaces wherever you might find buttons, switches, or LCD screens. By combining navigation and multimedia on the touchpad itself, Synaptics is already enhancing digital media devices by enabling users to look at movies or listen to music without turning their computers on. Now shipping in Korea are cell phones with interfaces that display both navigation and quick launch buttons that provide easy access to applications such as music and messaging. Possible new markets beckon in desktops and peripherals including keyboards and monitor controls.

Offsetting some of the potential gains from these new markets will be lower operating margins. Gross margin, for one, is being pressured by third-party content. For instance, in multimedia controls, Synaptics adds LEDs that would not be included in a traditional touchpad. As a result, during the June quarter gross margin receded to 43.4% from 45.2% in March and from 46.2% during the year-ago quarter. Expect gross margin to fall yet again to 41.5% this quarter.

Also straining operating margin are higher product development costs, which include new hires with the required technology skills; headcount increased 16% to 254 in fiscal 2006 and is expected to jump another 20% this year. *Not* being strained is Synaptics's ability to pay for growth. Cash and receivables net all book liabilities actually increased from $96.2m to $114.8m during the past year even as the company repurchased 1.2m shares of stock. Awash in liquidity, Synaptics's checkbook can cover current expenses seven times over.

Buoyed by its newfound innovations, Synaptics is on the verge of a strong first half of fiscal year 2007 as its products penetrate further into multimedia applications and consumer electronics. Management expects revenue to rise 20% to 25% sequentially in September and another 8% to 10% in December. Current trends are hinting at a top-line rise of 20% for the entire year.

But after eating Apple's contribution to 2005 revenues, that still continues the linear growth trend. If management keeps within its lowered margin guidance, the company will earn about $0.78 per share this year, off 8% from 2006 and giving it a forward PE of 32 at the recent price of $25. Clearly, Synaptics has to do better to make it a worthwhile investment. It's developing the tools and technologies to do just that during the coming years. Meanwhile, unless another Apple-type deal erupts, don't expect much upside from today's price before next summer.

Online Bonus Material: For information on registering for **Gilder/Forbes Telecosm 2006** and for additional analysis on **Advanced Micro Devices (AMD)** and Finisar **(FNSR)** logon with your GTR subscriber ID at ***www.Gildertech.com***.

Ikanos (IKAN)

PARADIGM PLAY: VDSL PIONEER

SEPTEMBER 12: 12.80; 52-WEEK RANGE: 9.00 – 24.87; MARKET CAP: 359.38M

As we expected in May, Ikanos's earnings per share from operations (excluding non-cash items and including taxes) were more than halved sequentially during the second quarter, falling to $0.06 from $0.14 in March. Fear not. The setback doesn't augur fading prospects for Ikanos. One reason for the slip is that expenses have increased to pay for ramping up new chipsets with high revenue potential. That's a temporary bump, and with the revenue prospects, a nice one to have.

New products include chipsets for integrated residential gateway modems using network processors acquired from Analog Devices earlier this year and IPTV-optimized VDSL2 chipsets with symmetrical 100 megabit per second capability at up to a thousand feet. Ikanos's previous speed limit at a thousand feet was an aggregate 140 Mbps, such as 100 Mbps down and 40 Mbps up or 70 Mbps symmetrical.

A further difficulty for Ikanos is that systems houses are currently thinning inventory. That's another nice bump because it means these vendors are preparing for a worldwide swell of VDSL2 deployments beginning later this year or early next as telcos race to turn a triple play, including high-definition multimedia. Until then, expect Ikanos's sales to continue to grow more moderately than the 25% and 50% quarters of the past year; CEO Rajesh Vashist is guiding flat for the third quarter following June's 15% sequential increase.

Don't worry about the near-term noise of ramp-ups and inventory draws. Let traders do that for you while creating a potential buying opportunity. Instead, worry about Ikanos's prospects in the coming VDSL2 boom. Currently, Vashist claims most of the embryonic VDSL2 market, but that will change as competitors congregate.

The toughest challenger to date has been Infineon, whose newest silicon supports eight speeds of VDSL, up to a symmetrical 100 Mbps, at the same thousand feet as Ikanos's latest offering. The rival's chipsets in some cases have equaled or exceeded Ikanos in integration. But integration is only one of many features that decide winning products. Also significant are power dissipation, the capabilities of processors, filters, and converters, and programmability. Ikanos's advanced programmable operating system can configure different bandwidths and protocols, allowing systems vendors to develop a single line card for all carriers and service plans.

Because of its early breakout lead in VDSL2 technology, Ikanos gives investors a lot of leeway. Even if Vashist loses half his market share by 2008, when the Linley Group forecasts sales for VDSL silicon to reach $504m, his stock would nearly triple to $31 based on a growth PE of 30. But only if he can increase his operating margin to 15% and limit his tax rate to 20%, as he now expects. Currently he falls far short on operating margin, projected to hit 7% in the third quarter.

On the down side, if Ikanos stalls at its current revenue run rate of $166m and shortchanges us on operations with a margin of 12%, the stock would still hang around $11 at a moderate PE of 20. With that much downside protection in return for a potential triple, Ikanos is worth the risk.

Essex (KEYW)

PARADIGM PLAY: : "TURPIN'S LAW"--ANALOG OPTICS GALORE

SEPTEMBER 12: 15.26; 52-WEEK RANGE: 13.80 - 25.06; MARKET CAP:331.43M

Inspired by optical genius Terry Turpin, whose fortes are passive optical devices and exotic signal processing, Essex Corporation continues in its role as the premier processor and collector of signals for defense applications. During the latest quarterly call, spirited CEO Len Moodispaw stressed that defense contractors still sole source much of Essex's work, which means that the denizens on the dark side still need Terry's unique inventions as fast as he can concoct them.

Though it doesn't work widely, optical processing is virtually magical in its niches, offering a tremendous amount of computational capability. Turpin's processors permit reading not only the terrestrial topography from a satellite image but also the subsurface location of mines, pipes, bombs, concealed laboratories, and other underground points of interest. His processors "take the junk out of the sky" to find the missile, and if there's a needle in the haystack, they'll probably find that, too.

During the second quarter, Essex completed extensive flight tests on its "software configurable radar" and began offering it to eager defense and intelligence customers. The futuristic device, which can be tuned in real time to optimize radar collection, has also received commercial inquiries. Essex also demonstrated that its "advanced optical processor" significantly increases the resolution of radar while collecting and processing multiple, random waveforms. Single waveforms, though easy to jam, have been used exclusively until now because random waves require processing power far beyond what electronics can deliver today.

Terry's talent for catching bad guys is driving Essex yet deeper into the conclaves of covert operations. The company remains on the "special funding list" that's insulated from budget cuts, and each of its largest contracts continues to expand, but not without growing pains—Moodispaw reports that his cost of services increased sequentially to 72% from 69%. Don't worry. That's normal for Essex when it ramps programs, and is a sign of more business to come.

For instance, to meet the escalating demands of his military clients, Moodispaw continues to expand his secured facilities, such as the new 37,000 square foot building devoted to the Cougar contract. And to get the best talent as quickly as possible, he often must pay higher subcontractor fees until the gurus and specialty groups can be hired or acquired. Moodispaw has narrowed potential acquisitions to a handful. Among them, in addition to companies with manpower for defense contracts, are companies with resources for developing commercial products.

As explained in last December's *GTR*, product breakthroughs are brewing. But Essex must first jump the hurdles that routinely challenge companies attempting to bring products from lab to customer, including packaging, manufacturing, pricing, and marketing—all new problems for this archetypal military contractor. To these, the spooks add yet another obstacle—limiting what Essex can commercialize to unclassified portions of its technology and devices. Despite the hurdles, Moodispaw promises that products will become generally available by 2008 or 2009.

Meanwhile, on the strength of its burgeoning defense and intelligence work alone, Essex expects revenue to rise 47% this year to $235m, pushing income before taxes up by 75% to about $15m. Giving investors pause is per share earnings, which will hold flat at about $0.38, a result of the newly tapped IRS siphon, now draining at a rate of 40% the capital available to catch Bin Laden and Company. That's one national security threat Terry can't stop. Despite the revenuers, Essex's checkbook remains healthy—cash and receivables total more than 4x accounts payable and the company holds virtually no debt. Net cash decreased 28% to about $31m during the first half of the year chiefly because of the earn-out payment on the thriving Windermere acquisition.

Essex is currently on track to kick revenue up another 28% next year. Based on this year's incremental margin and 40% tax rate, we ballpark earnings to increase 38% to $0.52, giving the stock a forward PE of 29 at the recent price of $15. But that excludes potential acquisitions, product surprises—*and* new contracts. Moodispaw is bidding on a number of defense contracts and is quite confident of new wins. So are we. Beset by terrorists and rising Asian powers, military and intelligence planners are coming to rely more and more on the vast amounts of processing power that only Terry Turpin can offer. Commercial markets will soon follow.

With all that going for Essex, 38% compound annual growth is probably conservative. Using it as a lowball projection, we calculate earnings of a dollar in 2009 for a stock price of $30 (at a growth PE of 30) sometime before that in 2008, with abundant upside potential.

While I was away, Andy Seybold and a chorus of others jumped into the breach in the *Gilder Technology Report* line and propagated the conclusion that wireless has entered a new era.

Technology doesn't matter any more. The GSM people have caught up with Qualcomm in the bits per second race. While the spectral efficiency (bits per second per hertz) of CDMA 2000 and WCDMA (wideband CDMA) remain roughly comparable to the orthogonal frequency division muxing claims, WiMax, WiBro, and other OFDM (orthogonal frequency division multiplexing) technologies have taken a decisive theoretical lead, by squandering bandwidth using spans of spectrum between 8 and 20 megahertz to reach potential speeds in the 100 megabits per second range.

With the bandwidth race essentially over, so they say, it's all software and content. Although Seybold does not say it, the implication is that the industry is moving beyond Qualcomm's strengths. TI tout Jim Faulkner opined that the Q has even lost its technical edge. Others presented indications that "CDMA" has fallen hopelessly behind "GSM" in the "Second World," from India to Brazil. Widespread was the view that with Sprint and Korea turning toward WiMax, the Intel technology was usurping 3G and obviating much of the Qualcomm edge for future generations.

I hope some of you responded with our subscriber message board stalwarts "Mullenjl" and "Faster Rats" and identified this moment as another buying opportunity in the ever recurrent cycle of deja views of the Q. Qualcomm has already gained back a lot of its recent stock price losses, but it remains in the same zone that it has occupied for the last three years. While its earnings have soared more than threefold, its price has stagnated since 2001, producing an ever-lower PE. What is wrong?

Although GSM retains some 80 percent of the global market in units and may still be making gains at the low end, GSM still entails WCDMA for the next generation. Wherever you look for the next GSM generation, Qualcomm is all over it. That's why Q's rivals are afraid of the future and want to perpetuate their current Indian summer with retarded technologies and FUD (fear, uncertainty, and doubt) suits at the International Trade Commission.

As new Qualcomm strategic chief Jeff Belk told me, he reread his old "Why Max?" paper and it rang truer than ever. Mobile WiMax is still way behind the Q roadmap and not closing ground. In its WiBro form, it is still experimental in Korea and does not offer any superior features unless you can lavish bandwidth on it. Since such bandwidth is not available in any single band on a global basis, WiMax will have to adapt to many different conditions with many different antennas and customized chipsets. The idea that WiMax is exempt from intellectual property issues is simply false. Estimates of 2 percent royalties are way premature, with Qualcomm, **Motorola** (MOT), and **Nokia** (NOK), among others, still to be heard from.

Meanwhile, Qualcomm's edge on companies such as Texas Instruments remains intact. Though Intel and TI are integrated device manufacturers investing billions annually in new wafer fabs, Qualcomm has been able to maintain generally lower costs by farming their leading edge designs among several foundries, **Taiwan Semiconductor, Chartered** (CHRT), **Semiconductor Manufacturing International** (SMI), and **IBM** (IBM), and moving to the next node, now 65 nanometers, at the optimal "crossover point" when costs dictate. The supposed Qualcomm default in "digital RF" is entirely fictional, as Qualcomm was first to move to Zero IF (no transition through intermediate frequencies in down conversion to baseband) and has developed all CMOS (complementary metal oxide semiconductor) integrated devices before TI, though RF is intrinsically analog on the front end.

Meanwhile, Qualcomm is on track to increase its revenues more than 30 percent this year. Its fiscal year 2005 Revenues were $5.67 billion, while as of July 19, fiscal year 2006 guidance was $7.4 to $7.5 billion (so 30 percent to 32 percent year-over-year) and MSM (mobile station modem modules, mostly in single packages) in fiscal year 2005 were 151 million, while Q4 fiscal year 2006 guidance was on a run rate of some 230 million, up nearly 60 percent.

In software and content, BREW (binary runtime environment for wireless) is a huge untold story. Suffice it to say that Q is becoming a software titan.

This is not a declining company.

Qualcomm is still a strong long-term hold which is on track to continue to gain share as wireless moves to 3G and 4G. It remains the anchor tenant in our portfolio.

Anadigics powers up

However, for outsize profits, the late Peter Drucker alerts us to seek the suppliers of the missing element that completes a system. In WCDMA and WiMax alike, the missing element

Marvell Contra Qualcomm

A bet with **Marvell** (MRVL) today is largely a bet *against* Qualcomm. *And* a bet against Texas Instruments. That adds up to some pretty high-risk investing. The reason is Marvell's planned acquisition of Intel's wireless baseband and mobile applications processor business. The deal is expected to close later this year.

Founded in 1995 as a fabless supplier of chips for hard disk drives, Marvell has since leveraged its semiconductor design expertise to expand into the communications networking market, providing high-performance analog, mixed-signal, and digital signal processors and embedded microprocessors for popular consumer items like MP3 players, game consoles, and wireless routers. Marvell's diverse product portfolio encompasses switching, transceivers, wireless, PC connectivity, gateways, controllers, storage, and power management.

Marvell is also diversifying its markets. Traditionally an enterprise company, in 2005 only 25% of revenue came from the consumer market. By 2007 management hopes that will improve to a 50-50 split. Marvell has a good track record on acquisitions and organic growth, having just notched its thirty-fifth consecutive quarter of sequential sales increases—a marvelous march that may have made management overconfident in the case of the Intel acquisition.

In basebands, the problem for Marvell will be the competition. It's a daunting crowd. In addition to Qualcomm and **Texas Instruments** (TXN), the major suppliers include **Freescale** (FSL) and **STMicro** (STM), who together took almost two-thirds of the total digital and analog baseband chip market last year according to Merrill Lynch and iSuppli. The remaining third went to the likes of **Broadcom** (BRCM), **Silicon Labs**, **Analog Devices** (ADI), **Infineon** (IFX), **Agere** (AGR), and others.

And it only gets tougher as you move to 3G. Merrill Lynch and iSuppli believe that Qualcomm, TI, Freescale, and **NEC** (NIPNY) controlled almost nine-tenths of the WCDMA baseband market in 2005. Worse yet, the three major handset companies—**Nokia** (NOK), **Motorola** (MOT), and **Sony-Ericsson** (SNE)—rely on proprietary ASIC (application-specific integrated circuit) solutions developed jointly with their semi partners, locking merchant suppliers out of half the market.

Digital and analog baseband processors and applications processors collectively comprise the heart of a cell phone or pocket computer—applications chips run the software and baseband chips control the communications functions. Mounting a very serious challenge even to the major incumbents will be Qualcomm's low-power, 65-nanometer ARM mobile processor, along with its continued leadership in highly integrated processors.

Marvell may be hoping the acquisition will produce significant synergy with its internal work in mobile chips. But the purchase comes while Marvell is coping with dual SEC and federal investigations of stock option grants, increasing the risk that key management may be forced out. That could be a deadly diversion for a small chip company trying to absorb what is by far its biggest acquisition to date—some 1,400 employees will come from Intel, increasing Marvell's current workforce by almost two-thirds—on the heels of integrating **Avago**'s printer ASIC business, acquired in May.

Though neither Intel nor Marvell have given a figure, the mobile unit is by all accounts losing money on revenue of about $400m or about 17% of Marvell's current sales. For this, Marvell will pay Intel $600m, wiping out what's left of long-term net cash following the $240m payment for Avago. Excluding Intel but including Avago, Marvell expects sales to reach $2.4b in the current fiscal year ending January, up 44% from $1.7b in fiscal 2006 and following consecutive surges of 36%, 49%, and 62% over the prior three years.

If we ignore Intel and Avago, the recent fluctuation of the stock price to around $18 is a nice deal. Incremental free-cash-flow (FCF) margin as a percentage of revenue increase has risen steadily from 13% in fiscal 2004 to 27% in 2005 and 32% last year. Holding this year's margin to 32%, we estimate a forward-looking FCF of $538m or $0.81 per share including likely dilution. Thus Marvell is trading at 22x forward FCF. That's a conservative multiple considering that $0.81 would represent an increase of 69% over last year, following 81% growth in 2005. For FCF/share to grow only 22% in 2008 at the 32% incremental margin, sales must rise just 20%. For Marvell, that's stellar protection on the downside.

Except for one problem. The market isn't ignoring Intel and Avago. And neither should you. During the quarter ending in July (not yet reported), operating margin was expected to fall by over 7% sequentially due to Avago, and that will certainly reduce cash flow. Then comes the stiff task of integrating the Intel unit later this year, putting yet more pressure on margins. Following that, Marvell faces the daunting long-term challenge of successfully competing against Qualcomm and TI for almost a fifth of sales based on a unit that's currently under water and in a market crowded with skilled swimmers.

Meaning it's not yet time to take a dip.

— *Charlie Burger*

in the portfolios of the dominant companies, Qualcomm and TI, is the power amplifier. They come in two forms. One, the low noise amplifier, is the device that converts the whispery signals in the air to a readable signal in the phone. The other powers up the signal for transmission through the antenna.

As the industry moves from GSM TDMA and 3G channels 200 kilohertz wide to the five megahertz wide channels of WCDMA and the up-to 20 megahertz channels of WiMax and its kin, both of these amplifier functions become increasingly broadband. They require detecting a wideband signal that is fempto-watts in power and amplifying it without distortion. They require transmitting a signal 20 megahertz wide with perfect linearity. These capabilities were all honed by CDMA, which spread its signal across the

relatively broadband span of 1.2 megahertz and thus required linear wideband low noise amplifiers. Now the CDMA suppliers can best fulfill the needs of next generation GSM (WCDMA) and all the WiMax and WiBro variants.

So for a higher leverage play, readers should investigate the makers of power amplifiers. **Anadigics** (ANAD) is apparently gaining an edge in this field. Earlier this year it announced approval of five new patents for its portfolio of highly linear and adjustable power amplifiers for applications in the new generations of wireless.

This master of low-power amplifiers has high-power potential for investors. After growing some 20 percent annually over the past two years, Anadigics is on track to surge more than 50 percent this year to about $166 million in sales. As a result, after years of losses, management projects breakthrough to profitability this quarter. But much more important, the company is running an incremental operating margin of around 46 percent, portending explosive earnings growth—far beyond what investors seems to be anticipating.

For example, to achieve a price/earnings multiple of 30 at the current stock price of $8, Anadigics needs to earn 27 cents per share or about 7 cents per quarter. At current incremental margins and growth rates, the company can easily hit that by the first quarter of next year and possibly by December. String current margins and growth out another year, and you're looking at earnings of 25 cents by the fourth quarter of 2007 for a yearly run-rate of a dollar. That means a $30 stock price if Wall Street buys a 30 times multiple.

No, we're not predicting the incremental margins and top-line ascent will continue at the current rate forever. But this analysis shows not only the most buoyant height of upside potential but also assures us of almost ironclad downside protection at the current price, ignoring short-term fluxes over the next month or so. And note that our year-end 2007 "outlier" estimate is based on a profit margin of only 18 percent.

Anadigics can command such high incremental margins partly because its cutting-edge six-inch wafer fab in Warren, New Jersey, produces more than twice the RF die per wafer compared with competing four-inch fabs. Built in 1999 and expanded in 2004, much of the depreciation for the structure has already worked its way through the financials. And since GaAs fabs, and particularly Anadigics unique Indium Gallium phosphide (Ingap) fabs, are similar to analog fabs that do not become outdated quickly, the company can grow a lot more with relatively minor capital outlays.

That means management has an opportunity to buttress its already liquid balance sheet, which boasts cash and marketable securities that exceed current liabilities by $58 million for a comfortable current ratio of 1.8. Anadigics carries two lumps of debt. The first, $46.7 million in convertible notes, comes due this November and can easily be paid in cash. But since the notes are convertible at the price of $21 per share, it would make more sense to keep the cash in return for a minor 4.7 percent dilution. (We assumed this possibility when estimating earnings above.)

The second piece of debt is $38 million of 5 percent converts due October 2009 but which can be converted into shares any time before that at $5 per share. The company can also pay these in cash, and full conversion would dilute another 15 percent. But if Anadigics continues to ascend with the broadband build-out and the coming teleputer society, that's not worth fretting over.

– George Gilder, with Charlie Burger
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