

ELECTRONICS REPORT

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BUSINESS & MARKET NEWS

Imaging Sensor Market - By the end of the 1990s, digital cameras started replacing analog models, but today there is a *new trend to replace digital cameras with cell phones* having good camera capabilities. A survey showed that 25% respondents would exclusively use cell phones for picture-taking if the quality matched that of today's upper mid-range digital cameras at about 6-million pixels. But the number could climb to 43% with good quality, ease of use and reasonable pricing. Users in India and China were particularly open towards cell phone photography; 79% could envision using only cell phones for picture taking in future. Here's a breakdown of those already taking pictures with their cell phones at least several times a week: India 60%, China 52%, U.S.A. 26%, and Germany 12%. The image quality of cell phones currently available on the market is regarded as mediocre in all four countries and *unsatisfactory image quality is the main roadblock*. Cell phone manufacturers have recognized the need for optimization and are developing models with higher-resolution sensors and more powerful lens systems. This is where specialized lens manufacturers come in. Through their professional know-how, they will play a key role in improving the camera function of cell phones. [*There are several developments that can be expected in lenses technology, including lenses that change shape under electrical stimulus*].



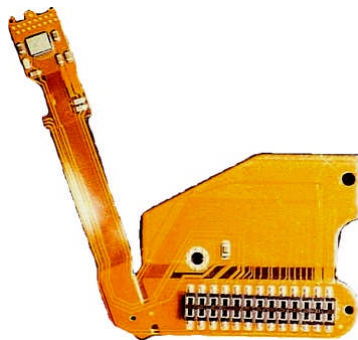
Phone Camera Domination - Opportunities - The global mobile phone shipment in 2005 was 795 million units, 57% of which (about 455 million units) had the cameras (Research and Markets, Inc.). They predicted that 85% of the mobile phones will be camera phones by 2008 - or 800 million units. The market scale of camera phone module will rise from \$2 billion in 2005 to \$4.8 billion by 2008. The camera phone module includes 3 parts: image sensor, lens and assembly. Most of the manufacturers (except Japanese) adopted CMOS image sensors. The market share of CCD image sensors will remain stable in the future, due to Japanese manufacturers' high requirement for quality, and currently only CCD sensor can satisfy the demand of Japanese market. There are about 20 CMOS sensor manufacturers worldwide, which can be classified into 3 categories. The **1st** is memory manufacturers, including Micron, Magnachip, ST, and Cypress. Micron was the earliest to enter the CMOS sensor field, and acquired Photobits in 2000; dominant in 2005. The memory manufacturers are capable of manufacturing large amount of wafers. These high-volume manufacturers are thus known for low costs and mainly target the mobile phone market. Before taking its independence, Magnachip was the logic IC division of Hynix. And Cypress is a large SRAM manufacturer. The **2nd** group specialized CMOS image sensor manufacturers, including Omnivision, Pixelplus, Transchip, Pixart, ElecVision, Taiwan Advanced Sensors Corporation (TASC). The first three manufacturers specialize in mobile phone market with a big advantage for design; while the other three ones are Taiwan-based manufacturers which are not so interested in mobile phone market, but more engaged in optical mouse field. The **3rd** is CCD/CMOS image sensor manufacturers with high fundamental technologies, Sony and Kodak for example.



The digital image/cellphone assembly processes for most manufacturers is centralized in Taiwan. Omnivision uses VisEra to assemble, Micron uses Kingpak, Samsung uses ASE, Pixart uses Sigurd, and IC Media uses King Yuan Electronics. Lens manufacturers are concentrated in Taiwan, Japan and South Korea. Due to its high technology content, Lens industry has a high entry threshold. Taiwan-based enterprises also have cost advantages with a market share of 57% in 2005, which is expected to reach 65% by 2006. There are 4 major camera phone lens manufacturers in Taiwan: Genius, Largan, Asia Optical, and Premier. The global market shares for those four are 23%, 25%, 5% and 4%, respectively. With the pixel increase trend for camera phones, more and more lens manufacturers are moving to glass lens manufacturing, and the producers with only plastic lens capability are declining. Enplas, for instance, whose sales revenue reduced 6 billion yen with a profit decline from \$1.08-billion to \$477-million. Especially in 2-megapixel camera phone lens market, glass lens manufacturers are taking obvious advantages; the optical giants like Fujinon, Konica Minolta, and Largan almost monopolize the market.

FLEXTRONICS Flextronics has become the largest camera phone module manufacturer in the world after it acquired the CMOS image sensor department of Agilent, and the image sensor testing plant of ASE; however, it does not have very efficient R&D. Altus, affiliated to Foxconn Group, developed fast, and its market share has risen from 4% in 2004 to 9% in the second half of 2005 with a shipment of 41 million sets. Meanwhile, domestic manufacturers are declining sharply. During the first half of 2005, the operation revenue of Macat's major businesses was 157 million Yuan, a 40% decrease year-on-year; the profit of its major businesses was 3.55 million Yuan, an 82% decrease year-on-year; and its net losses were 14 million Yuan, a 286% increase year-on-year. This is mainly caused by the loss of its major client Agilent, which turned to Flextronics

Flexible Printed Circuits (FPC) Update by BPA - Mobile phone and flat panel displays are the growth markets, but the automotive, aerospace and military sectors remain important. There has been a *huge shift of FPC fabrication to China* with rationalization and realignment in the rest of the world. The telecom and computer sectors account for nearly 60% of electronics and flex plays an important role in packaging and interconnection developments within these systems. Mobile phone handsets, particularly the clamshell variety, are key markets for interconnection and packaging that must accompany the move to 3G. The worldwide expansion of 3G is also driving the evolution and standardization of infrastructure equipment while datacom requires ever-increasing bandwidth capacity and data transmission speed.



China Notebooks - Lenovo accounted for 35.1% of the 1.4-million notebooks shipped in the China market during Q4-2006 and is maintaining its lead as the largest vendor. The average shipment value per notebook dropped from \$1,070 in Q2-2006 to \$1,020. The total Chinese notebook market was for 2006 was 4.81-units.

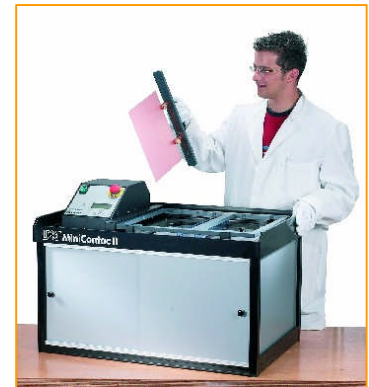
EQUIPMENT

Jetting for Conformal - Asymtek's Conformal Coating Technology - Asymtek (a Nordson company), a pioneer in jetting technology is applying jetting to improve the reliability of

implantable medical devices. They are supplying equipment to apply conformal coating materials that protect the electronics inside the devices. Jetting conformal coating materials onto the electronics in life-saving medical devices, such as pacemakers and defibrillators, protects the electronic circuitry from moisture, dust, chemicals, solvents and other types of environmental contaminants. Conformal coating also dampens the effects of mechanical and thermal stresses, vibrations, and electrical noise that can impair the functioning of the devices. Their SC-400 PreciseCoat™ Conformal Coating Jet is designed for the application of coating materials to highly selective areas, especially on small substrates, devices, or substrates with high-component density where there are tight tolerances between coated and uncoated areas. Jetting is a clean process, which is especially important in the manufacture of sensitive implantable medical devices. The SC-400 jet delivers small volumes and precision control of the conformal coating material for line widths down to 1.5 millimeters (60 mils) wide. Film thicknesses of 15 micrometers are achievable when using solvent-based materials. Acrylics, silicones, urethanes, UV-cure, and water-based materials with a viscosity range of 1 to 850 cps can be jetted.



Desktop Plating Machine - LPKF Laser & Electronics introduced the MiniContac RS, reverse pulse plating system, specially developed for the professional production of prototype and small batch production PCBs. This system is completely enclosed in a compact tabletop size, ideal for any rapid PCB prototyping situation, especially small runs and tight work locations, such as a research environment. The system utilizes reverse pulse plating (RPP) technology for uniform metal distribution for more aggressive aspect ratios. The MiniContac RS has the ability to plate holes as small as 8 mil (0.2 mm) vias in 62 mil thick standard PCBs smoothly; thin or fragile materials can easily be placed in a support framework before processing. The machine can handle circuit boards up to 9" x 13" and is completely closed with no external connection needed. It is suitable for plated through-holes in double-sided and multilayer PCBs.



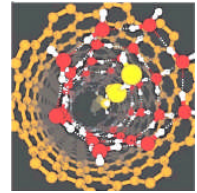
Getters & Application System - The SAES Getters Group, recognized SST International's Model 3150 MEMS sealing furnace for integration with its proprietary getter thin film PageLid, designed to maintain vacuum or contamination-free environments in discrete MEMS hermetic packages. Because of continuous process optimization, SST recently upgraded the Model 3150 High Vacuum Furnace to offer MEMS manufacturers the option to separate the critical steps of getter activation and

hermetic sealing of discrete MEMS packages, thus preserving the unaltered vacuum absorbing capacity of the getter material in the packages. Before package sealing, a proprietary high temperature process is devoted to getter activation. This equipment is fully compatible with the activation and operation conditions of our getters, as testified already by the major discrete MEMS package manufacturers worldwide, who select SAES-SST integrated solutions to boost their product performance.



MATERIALS

The Nano-Bandwagon - Designed for cost-efficient performance and high-volume applications, the Nano Silver 7000-95 powder suits radio frequency identification (RFID), flexible displays, and printed flexible circuits. Average particle size equals 60 nm; surface area is about 10 m²/gm. Particle synthesis, controlled through chemical precipitation, allows the company to tailor the material's surface chemistry to specific printing or dispense systems. This method of production controls morphology, internal structure, surface chemistry, and impurities. The nano-silver can be used to produce conductive inks, pastes, and adhesives with controlled rheology and viscosity for reportedly finer, sharper line definition and lower deposition weight. End products include RFIDs for inventory control in the retail industry, electronic paper for e-books, organic LEDs, and conductive surface-mount adhesives and inks. Ferro Electronic Material Systems.



Materials Market for Printed Electronics - The market for electronic inks and related substrate materials used in manufacturing printed electronics is expected to grow to \$7.7 billion by 2012 per NanoMarkets, a market analysis firm. Several firms are gearing up to enter full-scale production mode in 2007 and 2008. Nano-silver inks will bring numerous benefits; improved conductivity, lower temperature curing and the printing of finer lines. NanoMarkets expects that premium to gradually erode leading to strong growth in the nano-silver market, which is expected to reach almost \$900 million by 2014 [But nano-silver has been around for a long time without making much impact on the Polymer Thick Film industry where conventional flake & powder have been optimized during decades of "tuning" - KG]. Innovations are expected in polymer inks: organic LEDs and transistors are becoming key enablers for mobile video, flexible displays and RFID. These applications are driving the market for polymer inks which are expected to reach \$1.7 billion by 2014. NanoMarkets expects that such revenues will only be achievable through new polymer materials that offer improved mobility, high room temperature stability, tunable conductivity and greater ability to serve in outdoor applications. Plastic will dominate the substrate market, generating \$7.7 billion in revenues by 2014. Today, no other kind of material is so suitable for flexible products and roll-to-roll production processes at such a low price. Although several kinds of plastic including PET and other materials that offer curing advantages are being used, things look especially good for PEN because of its greater dimensional and thermal stability. [While Polymer Electronics is finally, starting to move, the industry needs truly innovative materials; perhaps metal-plated nanoparticles, or jettable metal procurers (or catalysts) make sense, but I would not put nano-silver high on the viability list - KG].

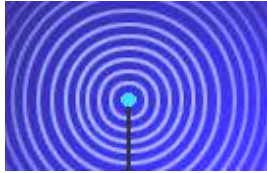


New Polymer Class - 1,2-disubstituted ethylenes - Since the late 1990s, Lauterbach and Snively (U. of Delaware) have been developing a method to make extremely thin polymer layers on surfaces. Such nanofilms are becoming increasingly important as coatings for optics, solar cells, electrical insulators, advanced sensors and numerous other applications. Their deposition-polymerization process takes place in a vacuum chamber, where the air is pumped out and the pressure is similar to outer space [isn't this just one form of CVD also used for parylene?]. The material to be coated, such as a piece of metal, is placed in the chamber, and the metal is cooled below the monomer's solidification point, which causes the monomer vapor to condense on the metal. Then the resulting film is exposed to ultraviolet light to initiate polymerization. The two-step

process allows for the formation of uniform, defect-free films with thicknesses that can be controlled to within a nanometer.

Telecom News

Wireless PCs - Intel's 2007 launch of its *Next-Gen Wireless-N* technology for Intel-based laptop PCs (IEEE 802.11n wireless specification) is expected to inject new energy into the network equipment market and drive shipment growth for draft-n products. The immediate impact on the production of local network-equipment makers will be an adjustment of their product mix to include the n-modules in addition to the previous focus of the 802.11b/g modules, the sources noted. Intel's move also confirmed earlier market rumors starting that a number of Taiwan-based WLAN-devices makers, including Foxconn Electronics (the registered trade name of Hon Hai Precision Industry), Asustek Computer and Gemtek Technology, were ready for the production of the draft-n modules in the third quarter of 2006. Additionally, Intel's initiation of the "Connect with Centrino" program along with Next-Gen Wireless-N technology will also help stir up demand for wireless AP (access point) routers, wireless gateways and other integrated wireless digital home equipment.



Who's Ahead in Advanced Telecom? - China launched a trial run of home-grown fourth-generation (4G) mobile technology in Shanghai calling it the world's first rollout of the wireless application. "It proves that the technology we've developed is feasible and brings us one step closer to put it into commercial use," said Mr. Xiaohu, a leading expert involved in China's 4G development program. 4G technology provides wireless services at much faster speeds, sharply improving high-quality images and data services, and potentially allowing for such features as multi-channel high-definition TV broadcasting. But 3G telephony is still not available in China due to repeated government delays. In a bid to crack a potentially lucrative market, engineers here have moved directly to developing the ultra-fast 4G technology. China has developed 3G technology of its own but has not yet licensed operators. *But Samsung (August 2006) unveiled the world's first 4G mobile technology and demonstrated it on a moving bus.* Korea, on the other hand, is moving carefully with 4G and Samsung plans to put the technology into commercial use by 2010 if the spectrums for 4G technology are opened by 2008. China plans to conduct more field tests of the 4G system and put it into trial commercial sometime before 2010. [*Walk before you run?*]

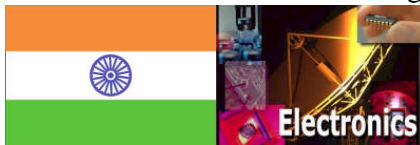


WORLD PERSPECTIVE

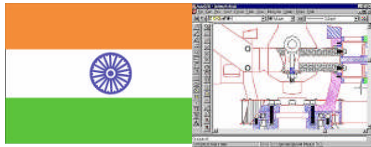
Vietnam Roadmap - Vietnam's burgeoning information-technology (IT) sector is drawing favorable parallels with the early phases of Taiwan's rise as a hardware and software powerhouse. The potent mix of government promotion, an energetic and qualified workforce, and growing flows of foreign capital and expertise are fast fitting Vietnam's technology industry into the global IT manufacturing, design and service supply chain. Vietnam's government has given highest priority to supporting its IT industries and has budgeted \$5.97-billion to improve the country's communications over the next 4 years. Vietnam's teledensity (phones per 100 people) is forecast to more than double to 56.1 by 2010. Vietnam is rich in IT-relevant industrial minerals such as bauxite and manganese, has a young and growing IT-literate labor pool,

and is attracting ever-higher levels of foreign investment. Intel's decision (2006) to build a \$300 million microchip-assembly plant in Ho Chi Minh City, and its November announcement to up that outlay to more than \$1-billion, promises to lure in big new IT-related foreign investments from Intel's suppliers and supporting industries. Intel sees Vietnam as one of its key markets with great opportunity for growth, innovation and partnership. Vietnam has a population of more than 80-million, with 50% under 25 years old, and this younger generation drives technology development. Surprisingly, Vietnamese programmers are earning on average \$7,200 per year compared to \$5,880 for India. (Asia Times)

India Electronics - Technology Forecasters Inc. (TFI) reported that about 20% of the 400 electronics companies it recently surveyed say they plan to manufacture in India within the next 2-years. This is in addition to the 25% of respondents that already have some manufacturing capacity in the region.



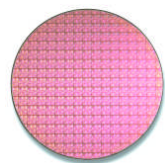
India & Design - Foundry giant Taiwan Semiconductor Manufacturing Co. (TSMC) announced that it has opened an office in Bangalore, India. The office's primary mission is to locally support existing TSMC customers in North America, Europe and Asia with design activities in India, and to help new fabless companies in India to grow and expand. TSMC wants to tune it to what is going on in India where there's been a huge increase in the number of advanced technology designs coming from that region. This office will help our customers quickly and seamlessly get their designs into manufacturing at TSMC and into the hands of their customers. The move comes despite recent reports that the fab industry's interest in India will cool down this year. The EDA realm has already expanded significantly into the subcontinent, with major players like Magma Design Automation, Cadence Design Systems Inc. and Mentor Graphics all having Indian operations.



India IT Growth - India's IC design services industry will continue to grow at over 20%/year through 2010 per In-Stat. Cost advantages and availability of skilled manpower have compelled integrated device manufacturers (IDMs) to either outsource part of their design activities to third-party design firms in India, or set up their own captive centers in the country.

Merge India - India has emerged as the fourth-biggest target in the Asia-Pacific IT mergers and acquisitions (M&As) space with deals worth over \$3.5 billion in 2006. Total M&A activities in Asia-Pacific technology sector totaled \$35.1 billion in 2006. Indian companies were target in deals worth 10% of the total value, according to data compiled by Dealogic. Taiwan was the most targeted nation with deals worth \$12.2 billion through 76 transactions followed by Japan with \$7 billion in 441 deals and China with \$5.1 billion in 275 deals. The acquisition of 85% stake in Flextronics Software by private equity firm Kravis Kohlberg Roberts (KKR) for about \$900 million alone contributed for over 25% of the total deal volume in 2006.

India Semicon Industry - The long-awaited special incentive package to boost semiconductor manufacturing in India has finally been approved by the government. A special incentive package prepared by the Department of Information Technology for semiconductor manufacturing and other hi-tech industries. This will help India become a preferred destination for the manufacture of semiconductors and other high technology IT products like flat LCD plasma panel displays and storage devices. The



Indian semiconductor industry, which witnessed a 29.8 percent growth with a turnover of \$3.2 billion in 2005, is expected to grow to \$43 billion by 2015.

Pole Vaulting - Flextronics Will Invest More in Poland, But! - Flextronics plans to spend 3.8 million Euros to develop their Polish operation but needs government incentives. The company already employs 3000 people in Pomorze Special Economic Zone. Further projects could increase employment by 800-1500 people and a third plant is planned for Tczew near existing facilities. But the plant will need more energy and PSSE is not providing it any longer; they outsourced their operations to another company. The new company will provide energy at a price, even though PSSE agree to provide it as a service without payment. Flextronics also said that due to the rules concerning public subsidies, they might get about \$20-million although they invested over \$100-million and were promised the whole amount at first, local media reports.

Intel-China - Intel is considering building its first semiconductor factory in Asia in the northeastern Chinese city of Dalian. China's central government has approved the project. Intel may join Taiwan Semiconductor Manufacturing Co. and Hynix Semiconductor Inc. in building factories in China, where growth is outpacing all major economies. The move may be a victory for China, which is competing with India in attracting investments from overseas technology companies. China became the world's biggest chip market in 2005, accounting for 21% of the \$192 billion in global sales, according to IC Insights. The nation's chip market will more than triple to \$124-billion from \$41-billion in five years. The plant, that might make computer processor chips, could cost \$3 to \$3.5-billion to build. Intel would also need to receive U.S. government approval to export its manufacturing technology to China. But India will be in competition with countries like China on manufacturing. Intel has assembly and testing plants in Shanghai and Chengdu



China LCD Mfg - Samsung Electronics, the world's top LCD manufacturer, plans to double the output of the LCD module production plant in Suzhou, China. This project has already begun and the monthly output of LCDs for use in televisions and monitors is currently reaching 1 million units. This expansion plan is expected to be completed by the end of 2007. Overseas and local firms as well as Samsung Electronics are all competing with each other in terms of Chinese local LCD output. Chinese companies are also joining in this battle, and TCL Corp., a China's leading consumer electronics appliances vendor, is in talks with partners to tap into the possibility of building an LCD plant in Shenzhen, China.

ENVIRONMENTAL

C-RoHS - RoHS legislation in China, on March 1st 2007 begins a new chapter in the Age of RoHS.



The first major difference between the European and Chinese approach to RoHS is the special marking that Chinese products will have to bear starting with the first day on which the RoHS laws come into force. In the European Union, products can be introduced to the market without special markings and conformity verifications even after July 2006. Another difference that will be implemented later is the testing in government-accredited laboratories of all E&E products. Thus, the Chinese RoHS legislation requirements are stricter than the European concept. The Chinese Ministry of the Information Industry (MII) will supervise the implementation of RoHS, which applies to all products manufactured in China for the Chinese or foreign markets and to imported products. The items included in the "Electronics Information Products" (EIP) category are subject to this law as are all other products listed by the

Chinese Compulsory Product Certification Scheme (CCC). The first step of RoHS implementation will be the marking of all E&E products and supplying of all the necessary information by manufacturers and importers. The standard marking of a product is to be published by the Chinese authorities by March 2007 and it could include the information presented in the table. The second step in Chinese RoHS implementation will be the testing of all E&E products. Step two is still under debate and it will depend on the final definition of the Chinese RoHS. Also, the list of all EIP products that RoHS applies to must be finalized. CCC will play a major role in keeping to the Chinese RoHS implementation calendar. However considering all these special requirements there could be substantial delays in the implementation of RoHS in China. SGS E&E is the worldwide leader in RoHS testing, with 24 accredited RoHS labs worldwide and 1 000 specialists in RoHS certification.

Economy, the Sea and Pollution Rising - China's coastal environment is being ravaged by the



twin threats of worsening pollution and rising sea levels, according to an official report released. About 25% of coastal areas suffer from moderate or severe pollution while fewer than half of coastal waters can be classified "clean", according to the State Oceanic Administration, which said the situation is worsening. The ecosystems in most bays, river mouths and coastal wetlands were "unhealthy" due mainly to the fact that 81 percent of sewage drains that discharged into the sea carry pollution levels that exceed national standards. China sea levels rose 1/10 of an inch during 2003 to 2006. The frequency of dangerous storm tides mainly by the typhoons in the summer and fall, had increased over that same period and were more extreme than previously. The rising sea level creates storm tides, coastal erosion and salt tides, which endanger people's lives and property and impact economic and social development per the report. In 2004, southern Guangdong province experienced salt tides for 7-months, severely impacting drinking water supplies. *Salt tide* is the influx of seawater into depleted coastal groundwater reserves. Much of China is an ecological disaster zone due to hundreds of years of population pressures topped off by the current economic boom, which has spewed massive industrial pollution into the environment.

IP

World Patents - China is making more use of the international patent system, with its patent



applications rising sharply in 2006 per WIPO. China made a total number of 3,910 international patent applications in 2006, an increase of 56.8% compared with the previous year. The Republic of Korea, another northeast Asian country, also saw a sharp rise of its international patent filings in 2006. It filed a total number of 5,935 applications, a rise of 26.6 percent compared with 2005. Worldwide patent applications rose 6.4 percent to a record number of 145,300 in 2006. According to WIPO, the United States remains the world's largest international patent filers, with just under 50,000 applications in 2006, accounting for 34.1 percent of the world's total applications. Those followed the United States in terms of total patent application numbers were Japan, Germany, the Republic of Korea, France, Britain, the Netherlands and China.

End to Rambus Wars? - The Federal Trade Commission (FTC) today issued a final opinion and order in the legal proceeding against memory giant Rambus Inc. in a move it said was "to remedy the effects of the unlawful monopoly Rambus established in the markets." In addition to barring

Rambus from making misrepresentations or omissions to standard-setting organizations, the order requires Rambus to license its SDRAM and DDR SDRAM technology and sets maximum allowable royalty rates it can collect for the licensing, bars Rambus from collecting or attempting to collect more than the maximum allowable royalty rates from companies that may already have incorporated its DRAM technology, and requires Rambus to employ an FTC-approved compliance officer to ensure that the company's patents and patent applications are disclosed to industry standard-setting bodies in which it participates. Rambus' alleged monopoly was on four technologies that the FTC said have been incorporated into industry standards for DRAM chips.

Rambus. The FTC/Rambus antitrust wrangling dates back to 2002, when the FTC charged Rambus with violating federal antitrust laws by deliberately engaging in a pattern of anticompetitive acts to deceive an industry-wide standard-setting organization, which it said "caused or threatened to cause substantial harm to competition and consumers." The FTC complaint alleged that Rambus participated in the Joint Electron Device Engineering Council (JEDEC), a standard-setting organization that the government organization said "maintained a commitment to avoid, where possible, the incorporation of patented technologies into its published standards, or at a minimum to ensure that such technologies, if incorporated, will be available to be licensed on royalty-free or otherwise reasonable and non-discriminatory terms." Rambus nonetheless participated in JEDEC's DRAM standard-setting activities for more than 4-years without disclosing to JEDEC or its members that it was actively working to develop, and possessed, a patent and several pending patent applications that involved specific technologies ultimately adopted in the standards. The charges were litigated in an administrative trial. In February 2004, the charges were dismissed in an initial decision and order by an Administrative Law Judge (ALJ). The FTC complaint counsel appealed the decision, which overturned the ALJ's decision in July 2006. In its liability opinion dated July 31, 2006, the FTC unanimously ruled that Rambus engaged in "exclusionary conduct that significantly contributed to its acquisition of monopoly power in four related markets." The opinion and order announced today prescribes the remedy for the July ruling. "Having found liability, we want a remedy strong enough to restore ongoing competition and thereby to inspire confidence in the standard-setting process. At the same time, we do not want to impose an unnecessarily restrictive remedy that could undermine the attainment of pro-competitive goals," the ruling said. *[Good!]*

WiMAX Patents Maxing - A study of 500 WiMAX related patents by WTRS now predicts phenomenal increase in WiMAX industry, but IP litigation activities will affect market leaders. A new Report from WTRS finds dramatic growth surge in WiMAX patent activity. WiMAX patent activity in 2005 was about 50 new patents but over 475 for 2006. Patents were tracked for mobile and fixed WiMAX and related technologies. Both U.S. and worldwide patents were evaluated with a focus on fundamental network architecture, enabling software, and RF chipsets.

