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Antenna Executives Make Predictions for 2008 / Recap 2007

Antenna manufacturers representing a variety of industries and applications recap the 2007 business year, and look ahead to 2008, forecasting what customers can expect from their companies and the industry as a whole.



Greg McCray
CEO
Antenova



Jeff Crosby
CEO
Ethertronics



Ilan Kaplan
CEO
RAS



Graham Taylor
Microwave Eng.
ATCI



Antonio Luck
Bus. Devlpt. Mgr.
Monarch Antenna



Burt Calloway
Vice President
KMW Comm.

On-The-Horizon : NEC Prototypes Wideband Wearable Antennas



NEC Corp. has successfully developed a wideband wearable antenna. The wideband wearable antenna uses a conductive fabric that can be attached to clothing and other items, or folded up for easy carrying. It is a high-performance mobile antenna that can act as a supplementary antenna in areas where there's poor reception.

Antennas are generally designed to operate in an open space, and if used in close proximity to a human body or other object, the impedance deteriorates, causing a noticeable reduction in performance. This antenna is designed to demonstrate equally good impedance characteristics whether used in an open space or close to a human body, for example when attached to the user's clothing.

One of the difficulties encountered in the past when using conductive fabrics was that soldering was not possible. In the case of this new antenna, power is supplied to a small flexible print substrate by a soldered coaxial cable, so that power supply is possible through capacity coupling with the substrate.

NEC will first test reception of digital terrestrial broadcasts in the 470 to 770 MHz band. Later, it will test the potential of this antenna as an external antenna for terminals in the future, conducting ongoing development studying potential future applications.

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New Antenna from AZimuth
Well Suited for Satellite
On-the-Move Applications

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Hemisphere GPS Awarded Two
New Technology Patents

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2008 Antenna Systems Conference: Call for Papers

The *2008 Antenna Systems Conference* is the world's leading conference on the latest advancements in antenna systems and technology. The two-day technical event offers an exceptional opportunity to network with peers, professionals and potential business partners involved in technology solutions serving a variety of applications. See the latest products, services and systems available and discover what's coming next. Learn the latest business and application developments in antenna markets worldwide.

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- ▼ Component Manufacturers & Providers
- ▼ Antenna Manufacturers
- ▼ Product Managers Seeking New Applications, Technology & Partnering Opportunities
- ▼ System Engineers & Managers

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Now Accepting Abstracts for Speaking Opportunities - See page 4

Send submissions to Jeremym@infowebcom.com by no later than March 7th.
Registration fees will be waived for all confirmed speakers.

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Year in Review and Looking Forward at 2008 – Industry Perspective

By Greg McCray, CEO, Antenova



We are observing, and participating in, an explosion in the number and types of wireless consumer devices. In addition to the continued growth of the global cellular phone market, we are seeing new product categories emerging as well as wider adoption of wireless connectivity in consumer electronics as they go mobile; e.g. Personal Media Players (PMPs), Portable Navigation Devices (PNDs), Ultra Mobile Devices (UMDs), games consoles, personal safety and tracker devices. These new devices and applications require

antennas and other RF components to support Bluetooth, Wi-Fi, cellular, 3G, GPS, WiMAX, UWB, FM radio, mobile TV, etc.

We are amazed at the number and variety of different types of “converged” devices. These new consumer driven products have better user interfaces, sleeker form factors, and are packed with new components and software to deliver the applications – and they all need multiple antennas. This trend has expanded our market opportunities with the addition of the new product categories as well as the designers and manufacturers of these devices.

At Antenova, we provide our technology and antenna and RF expertise to these devices and have seen a dramatic up-take in the number of projects. It goes beyond just working with the top 5 handset companies and top 5 notebook companies. There is an increasing number of Tier 2 and Tier 3 handset OEMs, a multitude of ODMs and the emergence of IDHs (Independent Design Houses), particularly in China and Taiwan, developing many of the new converged devices. These new players will become a growing market for Antenova as they have little antenna or RF experience or capability.

All this has had a very positive effect on our shipments, and we have experienced a 65 percent increase in units shipped so far. We have rolled-out new products to support these new devices (e.g., smaller, high performing antennas in our gigaNOVA product line covering 1.5, 2.4 and 5 GHz bands). We

also released our first Radionova RF Antenna Module, the GPS Radionova, in June, went into mass production and are already delivering to customers. In fact, we have had to bring new manufacturers online in order to fulfill the increasing demand for our antennas and RF Antenna Modules.

Our Radionova RF Antenna Modules which include the antenna, RF components, and the transceiver chip provides a full drop-in wireless solution for the customer. Radionova is already optimized and integrated in a single small package that does not require any design-in time and accelerates their time to market. This is a huge benefit to the customers, particularly those just entering into the wireless market, as it does not require the customer to have any expertise in integrating RF and antenna components. In addition, the Radionova Module’s small size and resistance to detuning provides the customer with more freedom on where to place the Module within the device.

Our GPS Radionova Modules were made generally available in mid-2007 and our Cellular Radionova Modules will become available in 2008. Already, our forecasts and order pipeline has positioned us for growth in 2008 even greater than 2007. With our newer family of RF Antenna Modules and additional antenna products (e.g., WiMAX, UWB, mobile TV, and various frequency combinations), we believe that Antenova will surpass 2007 factory orders.

And with increasing consumer demand for more applications and ‘always on’ connectivity, the antenna industry as a whole has a good outlook for 2008 and beyond.

For more on Antenova visit www.antenova.com

Year in Review and Looking Forward at 2008 – Industry Perspective

By Graham Taylor, Microwave Engineer, ATCI



The ever-evolving world of RF and the ongoing advance of digital technologies inspires ATCI, a satellite antenna technology, research and development company to continually develop innovative solutions that facilitate the processing of thousands of RF carriers simultaneously. In 2008 and beyond, we see this type of technology critical for monitoring, archiving and processing RF carriers in the digital realm.

Over the last year, ATCI has used new RF modeling capabilities to refine our existing feed components and to develop new antenna products. The motive force was the desire to improve performance in C and Ku bands as well as to adapt to changes in the satcom market, notably newly available or extended frequency bands.

Our 20-year-old workhorse C-band OMT was reworked early this year in order to operate over the extended C band (3.4 to 4.2 GHz). Modern 3D EM simulation tools, unavailable at the time of its original design, made it possible to expand the bandwidth of the OMT for the Asian market where the extended band is in common use. Simultaneously, the performance of the OMT over the old American C band (3.7 to 4.2 GHz) was also enhanced.

Ku band reception is an area of more intense design work and rework as more American customers use the higher frequency band and as ATCI does an increasing amount of work in the European market where most transponders operate at Ku band. In spring we satisfactorily tested a prototype Ku dual-polar array feed for the Simulsat C/Ku antenna. A second array feed design for use at Ku band is ready for prototyping and will be tested early in 2008. This feed will use technology similar to that in another ATCI product: the C/Ku 4-port feed. Like the 4-port, the new array will have aluminum horn antennae for array elements and a stripline OMT.

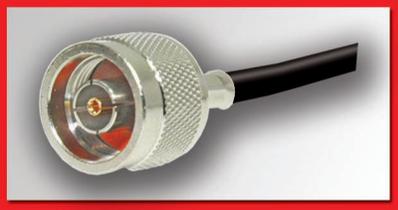
Perhaps the most exciting design work has been for new products in emerging bands. New OMT and scalar horn designs for use at X band (7.25 to 7.75 GHz) are now in the prototype stage. Feeds for use on the Simulsat C/Ku at Ka band (18.2 to 21.2 GHz) are well along in the design process. The flanges and frequency ranges for both X and Ka band feed designs were chosen to be compatible with LNBS from ATCI’s partner, Norsat. Feeds for S and L bands are in the early stages of development. Horns suitable for circularly polarized reception at C, X and Ku band are also in various stages of readiness.

Recently implemented next generation MW simulation software has enabled us to revisit old designs and shorten the design process for completely new devices. GRASP (General Reflector Antenna Software Package) from Ticsra has been especially useful to us as all of ATCI’s antennas are reflectors. Feeds must be designed in a fine-scale 3D EM solver, but a tool like GRASP is needed to optimize the combined performance of feed and reflector.

For more on ATCI visit www.atci.net

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Year in Review and Looking Forward at 2008 – Industry Perspective

By Jeff Crosby, President & CEO, Ethertronics



Consumer desire for all-in-one mobile devices is a key driver in the continued success of the wireless industry worldwide—and one of the reasons why San Diego-based Ethertronics experienced more than 6,600-percent revenue growth between 2002 and 2006 and has seen its installed base of embedded antennas reach nearly 100 million units across the globe.

According to a report published by Gartner Dataquest in March 2007, mobile phone unit production in 2008 is expected to reach more than 1.19 billion units with approximately 84 percent of these units consisting of enhanced phones, smartphones and wireless cellular PDAs. And, the smartphone category alone is growing at an astounding pace with a year-over-year rate of 80 percent. Ethertronics predicts this trend will continue in 2008.

With these feature-rich phones leading the pack, device manufacturers need to find workable antenna solutions to power electronic devices spanning an array of technologies from cellular and GPS to Bluetooth, WiFi, WiMAX, MediaFLO and DVB-H and more.

The integration of these multi-RF technology devices coupled with manufacturers' competitive drive to be first to market has opened the door for Ethertronics to gain a major share of the burgeoning mobile space.

As designers create these new-age devices, they must take into account the likelihood that RF noise and other system interactions will surface and ultimately threaten a device's performance. This is where Ethertronics has been able to successfully step into the picture with its patented Isolated Magnetic Dipole (IMD) technology. In addition to enabling smaller size and flexibility in design implementation, IMD enables Ethertronics to control the current flow throughout the antenna's G-shaped slot, providing shortened design cycles and higher isolation, selectivity and performance even in the smallest of antennas. Ethertronics has based its lines of high-performance standard Savvi ceramic antennas and customized Prestta stamped metal embedded antennas on this technology, and manufacturers across several continents are reaping the benefits.

In particular, the company's Savvi antennas, which were launched during the third quarter of 2007, provide designers with significant advantages; most importantly, their immunity to environmental changes and frequency shifts, which traditionally can compromise performance. The company expects to broaden the Savvi product line as mobile convergence gains speed and other wireless technologies are developed.

In addition, with both its standard and customized embedded antennas, Ethertronics is in a position where it can help continue the proliferation of rich functionality packaged into cutting-edge form factors. Samsung has led the mobile industry's "thin is in" trend by integrating Ethertronics' antennas into several models from its popular, award-winning Ultra Edition and Ultra Edition II product lines. In addition, Ethertronics has extended its antenna solutions beyond the traditional mobile marketplace with specialty applications such as DriveCam Inc., a global Driver Risk Management company. DriveCam is utilizing two Ethertronics antennas – a main quad-band antenna and a diversity antenna – for its new exception-based video event recorder, which is mounted on a vehicle's windshield to capture sights and sounds during hard braking, swerving and collision, inside and outside the vehicle. Ethertronics expects these trends and related design wins to continue in 2008 and beyond.

For more on Ethertronics visit www.ethertronics.com

Submit Your New Products for
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Contact Jeremy Martin
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Year in Review and Looking Forward at 2008 – Industry Perspective

By Ilan Kaplan, President, Raysat Antenna Systems



Raysat Antenna Systems (RAS), L.L.C. is a leading manufacturer of advanced, in-motion, low-profile, two-way satellite communications terminals. The StealthRay antenna was developed as a communications-on-the-move (COTM) solution for key markets, including the US Department of Defense (DOD), government and commercial organizations. This past year has been an enlightenment period for many organizations that are just now becoming aware of the advantages to COTM. From the military to commuter trains, mobile satellite technology is providing solutions to increasing communications demands.

The US military has been faced with incredible communications requirements in hostile environments and difficult terrain. Commanders are looking for two-way mobile antenna solutions that are low-profile, durable and cost effective. RAS has conducted numerous tests and integrations with the US Army and Marines and has been the focus of several COTM studies, including the Army's Battle Labs. The StealthRay antenna passed one of the Army's toughest durability tests and was heavy dropped from a C-130 aircraft at 500 feet.

The Department of Homeland Security has similar requirements for a communications network that gives the ability to collect and disseminate information between federal, state and local agencies. RAS' COTM antenna enables mobile satellite data and video applications within different agencies, such as Border Patrol vehicles. This technology enhances their current network by providing real-time information exchange while on-the-move, increasing situational awareness nationwide.

RAS has seen a tremendous increase of inquiries for COTM antennas from various digital news gathering groups (DSNG). These organizations are looking for an alternative to their currently large DSNG trucks that require crucial setup time and must remain stationary to operate. Recently, Fox News incorporated the StealthRay onto their SUVs to cover the presidential campaigns in Iowa and New Hampshire. This summer, RAS also supported the press bus assigned to the Clinton campaign. A mobile satellite link was used to provide newspaper reporters bandwidth to upload articles and photos between campaign stops, while on the road.

There has also been an increase in commercial COTM applications in 2007. RAS antennas are being used in the US and internationally to provide train commuters with wireless access to a mobile satellite link, enabling passengers to maintain connectivity, even at high traveling speeds.

While 2007 has been a year of 'introduction' for new, low-profile, in-motion, COTM antenna solutions, RAS foresees this next year as a time of growth. Awareness of the technology is bringing about a demand for solutions to growing network requirements.

For more on Raysat Antenna Systems visit www.raasys.com

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Email sales@european-antennas.co.uk
www.european-antennas.co.uk

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Year in Review and Looking Forward at 2008 – Industry Perspective

By **Burton Calloway, VP, KMW Communications**



The wireless paradigm has changed from voice and data to multimedia and content. The wireless carriers' vision is to be the providers of choice for any type information, anywhere at any time. To support new applications, new frequencies and band width are required. In the USA the FCC has and is conducting auctions for this band width. These new frequencies require both new and different types of antennas.

The wireless market consists of continued development and deployment of existing wireless networks and new networks.

The existing networks are very mature as evidenced by the marketing of Verizon "can you hear me now" and AT & T "more bars in more places". All the tier one and tier two carriers continue to fill in, expand and change their legacy networks to accommodate geographic and customers growth and to improve QoS. However, this expansion is only 10,000 -20,000 new cell sites or 30,000 to 60,000 antennas. An additional 10,000 antennas annually may be generated by change-out of exiting antennas caused by new traffic requirements. This generated the 50,000 to 70,000 new antenna sales in 2007. In 2008, wireless legacy networks antenna sales will remain relatively constant with 2007.

Today, AWS (2170 -2170 MHz) and WiMax (2.5 GHz) are frequently being deployed. In addition, the FCC is auctioning the 700 MHz in the first quarter of 2008. Since the wireless carriers are spending billions of dollars simply for license and the right to use these frequencies, they must make system and antenna deployments and investment meet their investor and customers requirements. This new will generate a 100 percent annual increase through 2010 in the number of new antennas deployment

The existing antennas on legacy cell sites are fixed electronic downtilt, beam width and gain antennas. Fixed antennas require tower crews and climbs for any adjustment or change-out. A new generation of remotely adjustable or programmable antennas are now accepted as the new antenna standard. The new programmable antenna generation is (1-way) electronic downtilt, (2-way) combining electronic downtilt and azimuth beam steering and (3-way) electronic total beam control with downtilt, azimuth beam steering and beam width selection. Programmable antennas are proven to substantially reduce OPEX and also increase the efficiency and lifecycle of CAPEX.

Since tower space is an expensive and scarce recourse, multiband antennas are being deployed for efficiency and cost reduction. The new applications and band also require tower top low noise amplifiers (TTLNA) to boost coverage and QoS.

While programmable antennas can be adjusted from the bottom of the tower by a PDA type device, the wireless carriers are moving to web based Antenna Management Systems (AMS) so they can easily make changes from remote locations. This saves time, avoids any site access issues and allows for real-time adjustments.

Today, network coverage and quality verification is done by drive testing. This is time consuming and expensive. New optimization systems interface with the BTS and receive information on ERLANG, total call attempts, call completions and dropped calls etc. This information is run in an optimization program to indicate the best antenna coverage for optimized coverage and QoS.

The new applications and frequencies being deployed by wireless carriers, combined with new management and optimization platforms, provide an excellent opportunity for growth of antenna and related wireless market segment providers for at least the next 3 to 5 years. Hopefully for all of us in the wireless industry, history will keep repeating itself in new form of new opportunities.

For more on KMW Communications visit www.kmwcomm.com

Year in Review and Looking Forward at 2008 – Industry Perspective

By **Antonio Luck, Business Development Manager, Monarch Antenna**



It does not take the keenest observer to notice that we are experiencing the wireless boom; an explosion of wireless devices with higher needs for connectivity. This demand is bringing greater attention to the role antennas play in this new era. Now many companies realize the importance of dedicating time and effort to antennas, while only a few years ago antenna design was relegated and left as one of the last concerns. This increased priority is responsible for anticipated growth of the antenna market with a push for more sophisticated antenna solutions.

Monarch Antenna, Inc. is a young company created by Delphi Corp., Michigan State University and Automation Alley to capitalize on the connectivity needs of the expanding wireless market for consumer, industrial, aerospace, military, and homeland security related industries. Monarch's success will be driven by the novel Smart Antenna Technology, known as Self Structuring Antenna (SSA).

Monarch's Self Structuring Antenna responds to variation in quality of the incoming wireless signal and reconfigures its electrical topology for an optimal, reliable communication link at all times. A genetic algorithm running on a microprocessor reads a feedback signal, creates combinations of switch based states and constantly selects the best solution for optimum reception.

Early in the spring 2007 Monarch developed its first production intent GEN 1 prototype offering polarization diversity; this is effective in minimizing fading due to multi-path in indoor applications. Advantages include less sensitivity to detuning, higher efficiency, increased range, decreased system power loss, and reduced installation costs due to the elimination of device positioning issues, all of this at minimal to no cost increase over conventional antennas.

Furthering pre-production developments, Monarch is testing its promising second generation of SSA, which has the benefits of pattern shaping, beam sharpening (increased gain), less sensitivity to frequency detuning, compensation for packaging effects, and a self-healing/graceful degradation of the antenna topology – "fail soft" antenna topology.

2008 will be the year in which Monarch will engage in the production of its first antennas. We expect a growing, but demanding market. The outlook for 2008 of the antenna industry is very encouraging with an ever-growing drive to mobile and on-the-go devices.

For more on Monarch Antenna visit www.monarchantenna.com

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Contact **Jeremy Martin**
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