

Design Notes & Market Reports

Wireless Sensor Network Market to Exceed 80M Units Shipped

The wireless sensor network market, led by ZigBee, grew ten-fold from 2007 to 2010 and exceeded 45 million annual shipments in 2011. “Strong growth is expected for 2012 and beyond as ZigBee pervades the home automation and home entertainment markets, while Smart Meters continue to be rolled out across the globe,” commented Peter Cooney, wireless connectivity practice director.

Smart metering is the largest market for ZigBee in 2012 and will continue to be the major market growth driver as global roll outs of smart meters continue apace. ZigBee/RF4CE use in the home environment will also be a major growth driver. Home automation and home entertainment together are forecast to grow to over \$300 million per annum by 2017.

“Until quite recently ZigBee/RF4CE has been the lead choice for interoperable low power wireless connectivity in the home automation and home entertainment markets, and one look at the ZigBee Alliance’s website shows the breadth of equipment suppliers that have developed products using the technology,” added Cooney. “However, the introduction of Bluetooth Smart is set to disrupt what could have been an almost monopoly in the low power connectivity space,” he said.

Proprietary wireless technology is expected to continue to dominate many markets for at least the next five years; however, the market is changing. The move from IR to RF remote controls and the increasing need for interoperability between “hub” devices and sensor “nodes” are two main factors driving growth for standards based low power connectivity such as ZigBee/RF4CE and Bluetooth Smart. There will be a battle over the coming years with each technology finding its own niches. In the longer term low-power Wi-Fi could also be a major competitor.

Competition from other technologies will have a major effect on ZigBee/RF4CE growth in the coming years. However, the ability to have almost unlimited node counts within a ZigBee system will help drive growth where other technologies compete (e.g. large building automation systems). So, while previously robust industry forecasts might not be met, Zigbee/RF4CE still has a lot of room to grow.

—ABI Research
abiresearch.com

GaAs Epitaxial Substrate Production Registers Small Gains

Continuing growth in demand for handset power amplifiers offset a shift away from GaAs technology for handset switches in 2011. The result of these two opposing trends was growth of GaAs epitaxial substrate production

of nearly 3 percent. Despite this small increase in production, the overall value of the GaAs epitaxial substrate market grew by 19 percent.

However, Strategy Analytics believes the disruptions caused by the 2011 earthquake and tsunami in Japan temporarily increased substrate pricing and this revenue growth is not sustainable. Strategy Analytics has recently released a spreadsheet model and Forecast and Outlook report from their GaAs and Compound Semiconductor Technologies Service (GaAs) entitled “Markets for Semi-insulating GaAs Epitaxial Substrate Markets: 2011-2016”. This report forecasts that total demand for semi-insulating (SI) GaAs epitaxial substrates from manufacturers such as IQE, VPEC, Kopin, RFMD, Hitachi Cable, Intelliepi and Sumitomo reached slightly more than 30382-kilo square inches (ksi) in 2011. The report estimates that this demand resulted in nearly \$601.5 million in revenues. The forecast indicates demand will continue to show slow growth, reaching nearly 35490 ksi by 2016. With disruptions in the supply chain easing, the report forecasts that substrate price erosion will return to a more conventional profile and GaAs epitaxial revenue will decline to \$544 million in 2016.

“The small growth in overall GaAs epitaxial substrate production in 2011 masked two more significant trends,” noted Eric Higham, Director of the Strategy Analytics GaAs and Compound Semiconductor Technologies Service (GaAs). “MOCVD material production increased sharply, fueled by growth in HBT-based handset PAs. Nearly offsetting this growth completely was a sharp decline in production of wafers using MBE epitaxy.”

Asif Anwar, Director in the Strategy Analytics Strategic Technologies Practice (STP) added, “The chief use of GaAs MBE wafers has been for HEMT devices in handset switching applications but device manufacturers have been moving away from GaAs for these switches. We believe the bulk of this technology conversion is complete and the MBE market will return to slow growth.”

—Strategy Analytics
strategyanalytics.com

Growing Use of RFID in Modernizing Applications

Companies, governments, and industries are increasingly turning to RFID as they look to modernize their operations, becoming more efficient and enabling quicker, more convenient service. The traditional uses of RFID for the identification of animals, people, and within the automotive sector are continuing to grow and are projected to increase by \$2.8 billion from 2012 to 2017. However, ABI Research’s new RFID Market Tracker found that modern-

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izing RFID applications will grow twice as fast with annual revenues derived from these jumping by \$4.5 billion in the same timeframe.

Asset tracking, supply chain management, baggage and cargo tracking, RTLS, contactless payment, and ticketing are all areas in which businesses are looking to operate in a quicker, smarter, and more secure manner. Practice director John Devlin said, "Despite the general economic malaise affecting much of the world, solutions and technologies that can deliver savings and provide wider benefit will attract investment. The business model and use case for RFID is now being better understood and real-world ROI can be demonstrated in a growing number of instances."

The need to be able to improve manufacturing and supply chain efficiencies, as well as track and identify components, products, and assets is now being considered in a growing range of market sectors. The ability to add and implement greater security is another factor driving the growing adoption of RFID in both traditional and new applications.

Devlin added, "There will be an increasing need for companies and, in particular government organizations, to be able to track and authenticate their in-house assets and equipment as well as items and products provided and sold. Think of the supply of food and pharmaceutical products, as well as consumer electronics and automotive, from the farm or point of manufacture and onto consumption and use. Similarly the installation and maintenance of large projects, e.g. transportation and utilities, are of critical importance. We expect to see increasing use of RFID ahead of alternative solutions to provide this audit trail."

—ABI Research
abiresearch.com

RF Feeder Cable Market Analysis

EJL Wireless Research is announcing the second edition of its global RF feeder cable market analysis titled "Global BTS Transmission Feeder Cable Analysis and Forecast, 2012-2016." The RF feeder cable is the primary solution that interfaces the traditional tower bottom macro cell BTS cabinet to the BTS antenna.

"The market dropped 13.6% year over year in total volumes (measured in km of cables) in 2011.

The 1/2" diameter feeder cable segment replaced the 7/8" diameter segment as the largest in shipment volumes in 2011 however the 1 1/4" or greater diameter feeder cable segment remained the largest in revenues in 2011. Aluminum cable product shipments picked up share overall in 2011 due to emerging markets demand and higher copper pricing" said founder and President, Earl Lum.

Weak end market demand in Asia Pacific (China), Latin America and Africa offset strong demand in India in 2011.

"We estimate a net decline in BTS feeder cable shipments over the next five years as migration to tower top RRU BTS site architectures will force the replacement of coaxial feeder cables with fiber optic cables. We see a potential growth year in 2013 due to a stronger decline in 2012 than in 2011 as demand is being pushed out. While RF cables will still be required for the transmission line connection from the RRU port to the antenna port, the much shorter lengths will alter the economic viability of the feeder cable market," said Lum.

—EJL Wireless Research
ejlwireless.com

Small Cell Shipments to Reach 8.6 Million Units by 2017

The Strategy Analytics Wireless Operator Strategies (WOS) report, "Small Cell Market Outlook 2012 – 2017—Seven Market Opportunities Quantified" predicts that Public Femto Cells will ship in the greatest volume in 2013 and 2014 until Pico Cells overtake them in 2015. From 2016 Metro Cells are expected to ship over 1 million units a year while Public Femto Cells will ship over 2 million and Pico Cells over 3 million.

The report forecasts global shipments by region and cell type from 2012 to 2017.

"Regionally, Asia Pacific is projected to be the largest market for small cells with over 12 million shipments between 2013 and 2017," commented Guang Yang, Beijing-based Senior Analyst for Wireless Operator Strategies. "Over 2 million of the cumulative Asia Pacific shipments are expected to be Metro Cells, but over 5.5 million will be Pico Cells and another 4.5 million Public Femto Cells."

The report further evaluates the market opportunity for specific applications, presenting not only total shipment numbers but also forecasts of the Served Available Market (SAM) for seven Use Cases to enable mobile operators to match the right type of small cells to specific requirements. Sue Rudd, Strategy Analytics Director, Service Provider Analysis, noted "The Use Case requirements span from overloaded urban 'Hot Zones' to Macro Cells needing range extension to sites with sporadic traffic peaks like football stadiums." She adds, "This analysis will help operators and infrastructure vendors to develop business plans that optimize small cell technology for each Use Case over the next 5 years and to penetrate these huge markets in the decade beyond."

—Strategy Analytics
strategyanalytics.com