

## Design Notes & Market Reports

### One Billion LTE Connections by 2017

LTE will make its presence felt in 2012 with connection volumes increasing nine-fold to reach 90 million by year-end, according to the latest research from the Strategy Analytics Wireless Operator Strategies service, “Worldwide Cellular User Forecasts: 2012-2017.” With LTE smartphones now pushing beyond their core early markets of US, South Korea and Japan, this technology is set for a rapid rise and will exceed one billion connections by early 2017.

Strategy Analytics predicts that LTE, which has overwhelming support by global operators as their 4G upgrade path and offers improved cost efficiency for mobile data services, will account for 15 percent of all mobile connections in 2017, putting it on a faster trajectory than any other mobile technologies. GSM took 12 years to reach one billion connections and WCDMA will take nearly 11 years, while LTE will take just over seven years.

“It has taken some time to warm up, but operator sentiment toward LTE has improved significantly over the last year,” commented Phil Kendall, Director of the Strategy Analytics Wireless Operator Strategies service. “The LTE smartphone market is providing this sudden lift, with LTE’s medium-term potential boosted by the much greater scale in today’s mobile market: WCDMA launched into a world of fewer than one billion mobile connections, whereas we have over six billion connections today.”

Sue Rudd, Director, Service Provider Analysis, added, “The race is on for mobile operators to reduce cost per Gigabyte (GB) to match the rate at which revenue per GB is falling. LTE is one of the key tools to deliver this improvement, with the early volume in LTE devices an encouraging sign for operators looking to maximize return on their LTE investments.”

—Strategy Analytics  
[strategyanalytics.com](http://strategyanalytics.com)

### Power Amps Fuel Handset Revolution

In advance of the February 2012 Mobile World Congress trade show in Barcelona, Spain, the focus of leading GaAs device manufacturers - including RFMD, Skyworks, TriQuint Semiconductor and ANADIGICS--- was on new power amplifier products to satisfy the growing trend for more frequency bands and modes in mobile handsets. The Strategy Analytics GaAs and Compound Semiconductor Technologies Service (GaAs) viewpoint, “Compound Semiconductor Industry Review February 2012: Microelectronics,” captures these product developments along with other product, technology, contract and financial announcements for semiconductor companies

such as Hittite Microwave, Agilent, WIN Semiconductors, Mitsubishi, Cree, Analog Devices, Nujira, M/A-COM Technology and TowerJazz.

“Handsets continue to be the largest segment of the compound semiconductor market,” noted Eric Higham, Director of the Strategy Analytics GaAs and Compound Semiconductor Technologies Service. “As handsets evolve with increasing functionality and frequency bands, designers are developing new power amplifiers and module platforms to meet the innovative front-end architectures.”

Asif Anwar, Director, Strategy Analytics Strategic Technologies Practice added, “In order to meet the stringent handset RF performance requirements, we are now seeing the large GaAs device manufacturers develop more multi-mode and multi-band power amplifier solutions that may be used alone, or integrated into modules.”

This monthly Strategy Analytics research summarizes financial, product, contract and employment developments from leading compound semiconductor device suppliers from February 2012. These announcements address a variety of commercial and military applications that use gallium arsenide (GaAs), gallium nitride (GaN), Silicon carbide (SiC), silicon germanium (SiGe) and complementary metal-oxide-semiconductor (CMOS) technologies.

—Strategy Analytics  
[strategyanalytics.com](http://strategyanalytics.com)

### Alternative Location Market to Reach \$8B; Indoor to Follow

Precision indoor location is stealing the headlines, yet wide-area alternative/hybrid location is where the money is today.

GPS, Bluetooth, Wi-Fi, and cellular location technologies will each be installed on over one billion devices in 2017, with direct revenues forecast to break the \$8 billion mark.

Senior analyst Patrick Connolly says, “Increasingly, tablet, camera, and portable gaming vendors are using location to differentiate and support additional services and revenue models. Others, like the femtocell market, are driven by mandates. To illustrate the potential, the non-cellular handset market is set to reach over one billion devices by 2017.”

“Ultimately the volumes are in cellular handsets where hybrids of GPS, Wi-Fi, Bluetooth, MEMs, NFC, etc. will provide increasing levels of accuracy and ubiquity indoors and out, creating the perfect platform for LBS, location analytics, and hyperlocal advertising. This will place significant control in the hands of carriers and

## Design Notes & Market Reports

handset vendors and represents both opportunity and competition to the precision indoor location market. Already, leading companies are putting in place the ecosystem to converge the alternative and precision indoor markets.”

ABI Research’s report, “Alternative Positioning Technologies,” considers the penetration of over seven alternative location technologies and how they can be combined to meet the needs of each market. It will also look at how the lines between wide-area and precision indoor location will blur into a ubiquitous location in all environments.

—ABI Research  
Abiresearch.com

### 850M IEEE 802.15.4 Chipsets to Ship in 2016

The IEEE 802.15.4 IC market, often referred to as wireless sensor networks (WSN), will expand to over 850 million units per annum by 2016, experiencing a compound annual growth rate of over 60% from 2010 to 2016. While growth is led by advanced metering infrastructure (AMI) equipment, significant uptake is expected in home automation, home entertainment, medical, and others.

ZigBee is the most widely-used IEEE 802.15.4 technology, accounting for 40% of total shipments in 2012 and growing to over 50% by 2015. Current deployments and growth are being driven by the ZigBee Alliance, the industry body now comprising over 400 members including IC suppliers such as Freescale, Intel, Marvell, NXP, STMicroelectronics, and Texas Instruments.

“Many IC suppliers have seen the potential of ZigBee and other 802.15.4 technologies and are helping drive new application solutions including the latest ZigBee Light Link standard,” says Peter Cooney. “No doubt these vendors see the potential of adding ZigBee to their arsenal of wireless connectivity technologies alongside Bluetooth, Wi-Fi, NFC, and others.”

As ZigBee grows in its key markets and expands into new areas it will see increasing competition as other technologies also continue to develop. One technology that will compete with ZigBee, particularly in the home environment, is Bluetooth. “ZigBee offers many advantages for smart home applications including large network sizes, low power consumption, and low cost solutions, however the ubiquity of Bluetooth in the smartphone and consumer desire to use this device as the home hub/controller will drive use of Bluetooth Smart and Smart Ready devices in the smart home environment, making it a strong competitor to ZigBee in this space,” comments Cooney.

ABI Research’s study, “Wireless Sensor Networks,” analyzes IEEE 802.15.4 and which standards, such as ZigBee, Wireless HART, and ISA100.11a, will influence and drive the market, as well as emerging technology and competitive solutions such as Z-Wave, 6LoWPAN, Bluetooth Smart, and Low Power Wi-Fi.

—ABI Research  
abiresearch.com

### Global PTP Radio Shipments Grew 12.2% in 2011

The global point to point (PTP) radio market grew by 12.2% in 2011 and erased the decline experienced in 2010, according to the latest report from EJM Wireless Research titled “Global Digital PTP Radio Market Analysis and Forecast, 2011-2016 8th Edition.”

Despite a challenging economic climate in the second half of 2011, coupled with continued turmoil in the Indian telecom market, the industry still managed to post good results,” says founder and President, Earl Lum.

EJM Wireless Research is proud to state that actual PTP radio shipments were within 4% of our forecast for 2011 and we will continue to target this level of performance going forward for our research products. EJM Wireless Research is forecasting that the PTP radio market will see softness in 2012 before a full recovery in the next growth cycle begins in 2013.

“Huawei continued increase its market presence with a 51% growth in shipments while NEC rebounded with 22% growth. We believe that deployments of 4G microcell BTS for mobile operators will drive the next growth cycle within the industry,” says Lum.

“Europe remained the top region as upgrades to support both 3G and 4G networks continued to demand” says Lum. Asia Pacific was again, weaker than expected due primarily to India. The hybrid (TDM/IP) radios grew in volumes but the segment lost market share to Ethernet radios which increased to 29% of total shipments. The 60/70/80GHz radio shipments declined by 39% in 2011 due to the softness in demand from Clearwire. BridgeWave Communications continues to lead this emerging product segment.

The report provides a unique perspective on the global shipments and demand for PTP radio equipment covering all vendors including Alcatel-Lucent, BridgeWave Communications, Ceragon Networks, DragonWave, E-band Communications, Ericsson, Aviat Networks, Huawei Technologies, NEC, Nokia Siemens Networks, SIAE Microelettronica and ZTE.

—EJM Wireless Research  
ejmwirelessresearch.com