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## **Conexant Streamlines Mobile Handset Design With A Cost-Cutting Direct-Conversion Transceiver Solution For Next-Generation GSM Platforms**

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Conexant Streamlines Mobile Handset Design With A Cost-Cutting Direct-Conversion Transceiver  
Solution For  
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*Conexant's Radio Frequency Transceiver Offers High Performance While Eliminating Costly Intermediate-Frequency  
Conversion Steps In Multi-Band GSM Handsets  
And Third-Generation Terminals*

NEWPORT BEACH, Calif., Feb. 12, 2001 — Conexant Systems Inc. (NASDAQ: CNXT) today announced a new single-chip radio frequency (RF) transceiver that streamlines the design of multi-band global standard for mobile communications (GSM) handsets. By eliminating costly intermediate-frequency conversion steps, Conexant's CX74017 advanced direct-conversion transceiver cuts the number of external components required to build a mobile handset by one-third, significantly reducing the cost, size and power requirements of next-generation GSM handsets. Proprietary design techniques employed in the receiver also enable the device to be used with any commonly available GSM baseband IC, which will shorten handset development cycles.

Conexant's CX74017 transceiver supports general packet radio service (GPRS) and downlink-enhanced data rates for global evolution (EDGE) standards, and provides a well-defined roadmap to dual-mode, wide-band code division multiple access (W-CDMA)/GSM universal mobile telecommunications (UMTS) handsets. These handsets will support such advanced applications as multimedia and high-speed web browsing.

"Dual-band GSM radios using conventional solutions require around 100 external components. The same radio requires only 65 with Conexant's CX74017, providing customers with a compact design platform for creating smaller phones, wireless PDAs and other advanced terminals that can also include such functions as Bluetooth connectivity, digital imaging and MP3 audio," said Moiz Beguwala, senior vice president and general manager for Conexant's Wireless Communications Division. "Plus, we've eliminated the need for baseband processing support so that this device can be cost-effectively combined with virtually any baseband solution on the market."

According to the market research firm The Strategis Group, revenue from wireless data is expected to reach \$33.5 billion globally by 2004. The firm also predicts that there will be one billion wireless subscribers worldwide on third-generation (3G) networks by the year 2010. Cahners In-Stat Group anticipates that the worldwide penetration of all wireless service will grow from 7.5 percent today to more than 32 percent during this decade on a global basis.

## Technical Details

The CX74017 transceiver uses several new techniques-for which patents are pending-to solve many of the problems previously associated with the implementation of direct-conversion technology, which has long promised the ideal solution for today's GSM handsets and next-generation terminals, including 2.5-generation (2.5G), GPRS and 3G terminals.

Direct conversion eliminates all of the intermediate frequency (IF) signal conversions that are required with the more commonly used superheterodyne technique, along with the costly discrete components that are associated with the extra signal-conversion step. Until now, direct-conversion solutions have required a significant level of digital signal processing (DSP) support from the handset's baseband circuitry, and have generally provided poorer performance than the more common superheterodyne receivers. In contrast, Conexant's implementation removes the baseband-processing burdens of earlier approaches to provide superheterodyne-like performance in a dual- or tri-band solution, while offering the flexibility to be combined with any of a variety of readily available digital baseband processor chipsets.

The CX74017 transceiver consists of integrated low-noise amplifiers (LNAs), a quadrature demodulator, baseband filters and a direct current (DC) offset correction sequencer. It uses a low-frequency, low-pass filter to perform all of the required tasks associated with rejecting in-band blocking signals and adjacent alternate channels. This contrasts with superheterodyne architectures that first convert the RF signal to an IF signal using one external surface acoustic wave (SAW) filter. One SAW filter is used for each of the bands supported in a multi-band handset, to reject the image frequency at RF. Then, the IF signal is converted to a baseband signal using a second local oscillator and external voltage controlled oscillator (VCO). Because Conexant's proprietary technology eliminates the IF conversion stage, all of the filtering for each of the bands can be performed inexpensively, on chip.

Other CX74017 features include a translational loop structure on the transmitter side, consisting of an in-phase and quadrature (I/Q) modulator, offset mixer, phase detector and transmit VCO with no external tank. The transmitter offers exceptionally high performance, thus also reducing the number of external components required. The local oscillator structure is formed around a fractional-N phase lock loop (PLL) with all components integrated, save for the external passive loop filter. Agile channel switching allows support of GPRS multi-slot operation, and key performance parameters are optimized through the use of Conexant's internally developed, low-cost RF packaging technology.

## Pricing and Availability

The CX74107 transceiver is packaged in a 9x9 land grid array (LGA) and priced at \$8.50 in quantities of 10,000. Conexant has begun sampling the CX74107 transceiver to key customers, and volume production is scheduled for the second calendar quarter 2001.

## Safe Harbor Statement

This press release contains statements relating to future results of Conexant (including certain projections and business trends) that are "forward-looking statements" as defined in the Private Securities Litigation Reform Act of 1995. Actual results may differ materially from those projected as a result of certain risks and uncertainties. These risks and uncertainties include, but are not limited to: maintaining a consistent and reliable source of energy; global economic and market conditions, such as the cyclical nature of the semiconductor industry and the markets addressed by the company's and its customers' products; demand for and market acceptance of new and existing products; successful development of new products; the timing of new product introductions; the availability and extent of utilization of manufacturing capacity; pricing pressures and other competitive factors; changes in product mix; fluctuations in manufacturing yields; product obsolescence; the ability to develop and implement new technologies and to obtain protection for the related intellectual property; the successful separation of the Company's Internet infrastructure and personal networking businesses; the ability to attract and retain qualified personnel; labor relations of the company, its customers and suppliers; and the uncertainties of litigation, as well as other risks and uncertainties, including but not limited to those detailed from time to time in the company's Securities and Exchange Commission filings. These forward-looking statements are made only as of the date hereof, and the company undertakes no obligation to update or revise the forward-looking statements, whether as a result of new information, future events or otherwise. Other brands and names contained in this release are the property of their respective owners.

## About Conexant Systems, Inc.

With revenues of \$2.1 billion in fiscal 2000, Conexant is the world's largest independent company focused exclusively on providing semiconductor solutions for communications electronics. With more than 30 years of experience in developing communications technology, the company draws upon its expertise in mixed-signal

processing to deliver integrated systems and semiconductor products for a broad range of communications applications. These products facilitate communications worldwide through wireline voice and data communications networks, cordless and cellular wireless telephony systems, personal imaging devices and equipment, and emerging cable and wireless broadband communications networks. The company organizes its activities into two business areas: Internet infrastructure, which consists of the Network Access products, and personal networking, comprised of Digital Infotainment, Personal Imaging, Wireless Communications and Personal Computing products. Conexant is a member of the S&P 500 and Nasdaq-100 Indices. For more information, visit Conexant at [www.conexant.com](http://www.conexant.com).

## Glossary of Terms

### **Baseband**

The term baseband refers to the base information signal frequency or bandwidth (for example data or voice), which is modulated or demodulated to transmission frequencies by the radio device. The term is also used to refer to the digital signal processor, which takes the raw data and modulates or demodulates for application to another data interface or, in the case of voice, to prepare the signal for connection to loudspeaker and microphone.

### **Direct Conversion (or Direct Downconversion)**

Direct conversion is the process of taking an incoming modulated RF signal and mixing it directly down to the frequency of the modulation data without going through an intermediate-frequency conversion.

### **Direct Current Offset Correction Sequencer**

Most analog circuits intrinsically generate statistically varying DC offset, which can become large and difficult to handle following large, directly coupled gain blocks. DC offset correction must therefore be carried out. In the case of a large cascaded gain chain, it is necessary to correct the DC offset with several compensation stages. The stages must act in the correct sequence in time in order for the process to be carried out successfully. This may be manually controlled via a baseband processing device, or via an integrated digital sequencing circuit, triggered by a receive enabling signal, and timed from the master system clock.

### **Downlink**

Received data stream.

### **Dual-Band or Tri-Band**

Dual-band mobile phones can work on networks that operate on different frequency bands. This is useful if you move between areas covered by different networks. For example GSM 900 and GSM 1800 (also known as DCS or PCN) for dual-band phones, and GSM 900, GSM1800 and GSM1900 (also known as PCS band) for tri-band phones.

### **Enhanced Data Rates for Global Evolution (EDGE)**

EDGE is a technology that gives GSM and TDMA similar capacity to handle services for the third generation of mobile telephony. EDGE was developed to enable the transmission of large amounts of data at a high speed, 384 kilobits per second (kbps).

### **European Telecommunications Standardization Institute (ETSI)**

The European standardization body for telecommunications.

### **Filters**

A filter is a device which allows only certain frequencies of the broadband input to pass through. In the case of a high-pass filter, only signals above a certain frequency will pass. In the case of a bandpass filter, only signals between two defined frequency points will pass. In the case of a low-pass filter, only signals below a certain frequency will pass. A baseband filter is a structure which filters a received signal at its baseband frequency.

### **Fractional-N Synthesizer**

A fractional-N synthesizer is a device that enables fast switching between generated frequencies by allowing the PLL phase detector to operate at a much higher frequency than the channel spacing, as would be the case with a conventional integer-N device.

### **General Packet Radio Service (GPRS)**

A packet-linked technology that enables high-speed (115 kbps) wireless Internet and other data communications.

### **Global System for Mobile Communications (GSM)**

Originally developed as a pan-European standard for digital mobile telephony, GSM has become the world's most widely used mobile system. It is used on the 900 MHz and 1800 MHz frequencies in Europe, Asia and Australia, and the 1900 MHz frequency in North America and Latin America.

**GSM 1800**

Also known as DCS 1800 or PCN, GSM 1800 is a digital network working on a frequency of 1800 MHz. It is used in Europe, Asia-Pacific and Australia.

**GSM 1900**

Also known as PCS 1900, GSM 1900 is a digital network working on a frequency of 1900 MHz. It is used in the U.S. and Canada, and is scheduled for parts of Latin America and Africa.

**GSM 900**

GSM 900, or just GSM, is the world's most widely used digital network operating in over 100 countries around the world, particularly in Europe and Asia Pacific.

**In-Phase and Quadrature (I/Q) Modulator**

An I/Q demodulator (or vector demodulator) is a device which mixes a complex signal input down from an intermediate or RF input to a baseband vector output.

**Intermediate Frequency (IF)**

Conversion from either baseband or RF to an intermediate frequency is a technique used in transmit and receive radio subsystems enabling extra filtering to occur to eliminate unwanted interferers.

**Local Oscillator (LO)**

An up or down converting radio subsystem that takes a baseband signal and modulates or demodulates it to or from a RF signal. The demodulation or modulation process is a mixing of the generally low-frequency baseband signal with a high-frequency signal. The high-frequency signal must be generated within the radio, and is known as a local oscillator signal. The local oscillator is usually generated via a PLL frequency synthesizer.

**Low-Noise Amplifier (LNA)**

A low-noise amplifier is the first stage of gain at the input to a receiver structure that takes the extremely weak input signal and amplifies it for further processing. As the signal is of a very low level, it is undesirable that the signal be influenced by any noise generated in the amplifier itself, therefore it is designed to have minimal noise generation.

**Phase Lock Loop (PLL)**

A phase locked loop is a technique whereby an otherwise asynchronous signal is locked to a high-integrity reference. Generally, the asynchronous signal may be at a higher frequency than the reference thus effecting the accuracy of the reference signal on the higher asynchronous signal and/or performing a frequency translation.

**Protocol**

A protocol is a sequence of interactions defined by a standard situation or reference scenario.

**Radio Frequency (RF)**

The frequency of transmission and reception.

**Receiver**

A device that takes an incoming radio signal and extracts the voice or data signal. A tunable receiver is one that may be centered around multiple RFs or channels.

**Superheterodyne Receiver**

A superheterodyne receiver employs the technique of first mixing the incoming signal down (or up) to an IF before mixing it to baseband.

**Surface Acoustic Wave (SAW) Filters**

A surface acoustic wave filter is a passive device that filters incoming signals by using a passive piece of semiconductor configured to employ its crystal resonance to allow certain signals to pass and certain signals to be attenuated or filtered.

**Third Generation (3G)**

Third Generation, or 3G, is the next generation of wireless technology beyond personal communications services. The 3G standard will first be deployed in Japan as W-CDMA by NTT DoCoMo in 2001. License auctions have been held in U.S. and European countries for 3G spectrum for deployment in 2002. The 3G standard is known as UMTS in Europe. In North America, 3G will be deployed as two different standards; W-CDMA and cdma2000. It is designed for high-speed multimedia data and voice, and intended to enable advanced global roaming, or the ability to go anywhere and automatically be handed off to whatever wireless system is available. The first generation of wireless technology (AMPS, TACS and NMT standards) was used almost exclusively for voice. Starting in the 1990s, second-generation (2G) systems used digital encoding and include GSM,

TDMA and CDMA, and have also been used primarily for voice. Between now and 3G implementation, a variety of 2.5G techniques are being employed to improve the speed of data for enhanced email and Internet access, including packet enhancements for GSM (the general packet radio service, or GPRS, standard), improved bandwidth and data rates for GSM and TDMA (the enhanced data rates for global evolution, or EDGE, standard), and improved data rates for CDMA (IS-95B and HDR).

**Transceiver**

A transceiver is a combination of receiver and transmitter in a single device.

**Universal Mobile Telecommunications System (UMTS)**

The name for the third-generation mobile telephone standard in Europe-standardized by ETSI.

**Wideband Code Division Multiple Access (W-CDMA)**

Wideband CDMA is one of the two complementary protocols adopted for use in the UMTS standard. W-CDMA will be used to provide the type of services currently performed by the GSM cellular network.

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