# RF Subsystem with DigRF Interface for Next-Generation, Quad Band, Multimedia Handsets

Skyworks Solutions' Helios™ 3 is said to be the smallest and most efficient Polar Loop™ EDGE RF subsystem with digital RF (DigRF) interface. Its architecture minimizes the number of external components and reduces the complexity, cost and power requirements of next-generation EDGE platforms required to implement a complete RF section with a digital interface. The DigRF standard repartitions the analog to digital interface within the system layout. Helios 3 is an ultra compact solution that is optimal for manufacturers' next-generation, quad-band handsets incorporating advanced multimedia features including DVB-H, FM radios, MP3 players, digital cameras, and Web browsing. Helios™ 3 also simplifies factory calibration and reduces radio frequency (RF) board space by an additional 40 percent when compared to the company's previous Helios DigRF design. The chipset performs under an array of situations such as extreme temperatures, low-battery voltage, and antenna mismatch. The SKY74218 is a 5 mm x 5 mm RF transceiver with DigRF interface for quad-band GSM, GPRS and EDGE applications. It is a highly integrated device with a Polar Loop™ transmitter and a receiver that contains four integrated low-noise amplifiers (LNAs), a quadrature demodulator, and selectable bandwidth digital baseband filters. The transceiver also generates a number of internal, general-purpose inputs/outputs (GPIOs) used for front-end module (FEM) control. The SKY77524 is a 6 mm x 6 mm transmit (Tx) and receive (Rx) FEM with integrated coupler for quad-band GSM, GPRS and EDGE applications. The device, which provides a complete Tx path from transceiver output to antenna, combines a power amplifier (PA), Tx harmonic filtering, an integrated coupler, and high-linearity and low insertion-loss pseudomorphic high electron mobility transistor (pHEMT) RF switches. The FEM enables a complete transmit-VCO-to-antenna and antenna-to-receive surface acoustic wave filter solution. The SKY77524, together with the SKY74218, create the Helios™ 3 EDGE RF subsystem. These two devices form an integral portion of Skyworks' patented closed Polar Loop™ architecture, which autonomously splits amplitude and phase using the traditional analog in-phase and quadrature (I/Q)

signals. The filter saving advantage of the translation-loop approach is embedded in the architecture. **Skyworks**

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