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Trolling for gold in the BlackBerry Bold

Research In Motion's first 3G-data-capable "world" phone, the BlackBerry 9000, or Bold, gets a tech inspection courtesy of an *EDN* partnership with phoneWreck. How did RIM squeeze triple- or quad-band UMTS, triple-band Wi-Fi, a QWERTY keypad, and copious additional capabilities into a 4.5×2.6×0.5-in., 4-oz form factor?

The integrated SiRF GPS receiver works with the phone's cellular subsystems in an A-GPS mode. The phone's LED-flash-augmented, 2M-pixel camera has digital-zoom capabilities and captures 480×320-pixel video streams. Texas Instruments' TLV320AIC3106 codec handles audio capture and playback.

The processing heart of the BlackBerry Bold is Marvell's PXA930 Tavor ARM-based processor running at 624 MHz. The CPU's memory partner is a triple-technology multichip-package stack from Samsung: 1 Gbyte of MLC (multilevel-cell) moviNAND flash memory; 128 Mbytes of bootable, SLC (single-level-cell) OneNAND flash memory; and 128 Mbytes of mobile-DDR SDRAM.

The PCB (printed-circuit-board) backside (not shown) is comparatively sparse. It exposes the action end of the trackball module, along with the QWERTY keypad's membrane switches, and it reserves sufficient space for the Samsung 2.65-in.-diagonal half-VGA LCD with 64,000-color support.

The BlackBerry Bold's cellular subsystem contains Anadigics' AWT6221 and AWT6241 power-amplifier chip set, along with Infineon's WCDMA PMB5701 transceiver. The phone supports UMTS 3G-data services in the 850-, 1900-, and 2100-MHz bands, along with the 800-MHz band in a version for Japan. A Renesas power-amp-plus-transceiver combo handles the 850-, 900-, 1800-, and 1900-MHz GSM voice and data frequency-band options.

Wireless-communications options other than cellular include dual-band 802.11a/b/g Wi-Fi, which a four-chip transceiver-plus-power-amp-plus-power-management cluster from Texas Instruments implements. The BlackBerry Bold also includes Cambridge Silicon Radio's BlueCore4 Bluetooth 2.0 transceiver supporting A2DP stereo and AVRCP protocols. TI's TPS65850 handles more general systemic power-management control. Cypress Semiconductor's CYWB0124AB administers both mini-USB (Universal Serial Bus) 2.0 transfers and the microSDHC (secure-digital-high-capacity)-memory-card interface.

