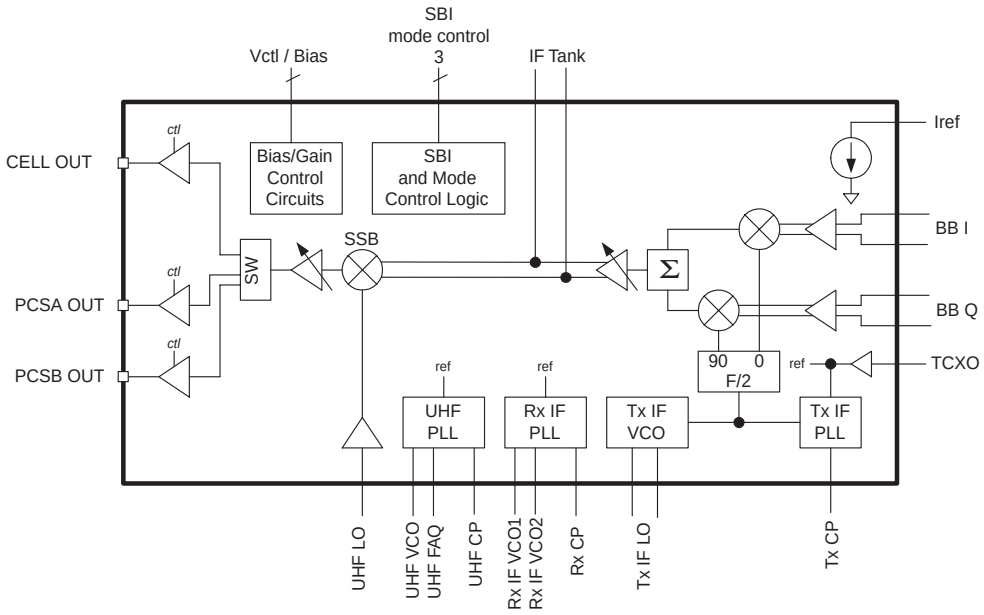

# Tx BASEBAND/RF PROCESSOR

QUALCOMM CDMA Technologies
Enabling the future of communications.™

# RFT5600™

RFT5600™ QUALCOMM CDMA TECHNOLOGIES

**Figure 1. RFT5600 Functional Block Diagram**




## OVERVIEW

At QUALCOMM CDMA Technologies (QCT), we strive to constantly improve the indispensable communication tools we all use every day. QCT creates state-of-the-art chipsets, system software, development tools and products – such as the Wireless Internet Launchpad™ suite of technologies and software – that support the most advanced digital wireless features and functionality available for wireless devices and base stations – while continually reducing complexity, cost and board-space requirements.

The RFT5600 device is a fully integrated baseband-to-RF transmit processor performing all transmit (Tx) signal processing functions required between the analog baseband output from QUALCOMM's Mobile Station Modem (MSM™) devices and the power amplifier (PA) for CDMA cellular, PCS, and IMT-2000 1xMC single-band and dual-band applications. The RFT5600 device leverages previous RFT3100™ circuit designs, adding fully programmable UHF and Rx IF PLLs to offer an advanced, tightly integrated CDMA Tx solution that simplifies RF PCB design, shortens development cycle time, and reduces handset material costs. Together with QCT's PA modules, a complete two-chip Tx radio implementation for CDMA single-mode, dual-mode, dual-band, or tri-mode handsets is can be realized with minimum circuitry.

Utilizing an analog baseband interface, the baseband quadrature signals are upconverted to the cellular, PCS, or IMT-2000 frequency bands and amplified to provide signal drive capability to the PA. The RFT5600 device includes a quadrature baseband-to-IF upconverter, a programmable PLL for generating the Tx IF frequency, Tx IF VCO, single sideband upconversion from IF to RF, one cellular and two PCS/IMT-2000 driver amplifiers, and Tx power control through an 85 dB VGA. The single sideband upconversion also eliminates the need for an IF SAW filter normally required between the upconverter and driver amplifier, providing further board area and cost savings. Additionally, the RFT5600 device incorporates programmable PLLs for generating both the UHF and Rx and Tx IF LO frequencies used in conjunction with QUALCOMM's receive chain devices; both PLLs can be used independently and include an input buffer to accept external VCO signals. Designed to meet the requirements for global CDMA markets, the RFT5600 device will operate over the following Tx frequency ranges:

Cellular band
824 MHz – 925 MHz

PCS band/IMT-2000 band
1750 MHz – 1980 MHz

The range of supply voltage is from 2.7 V to 3.3 V, which provides operating compatibility for platforms utilizing a single-cell Li-Ion battery design. RFT5600 processor

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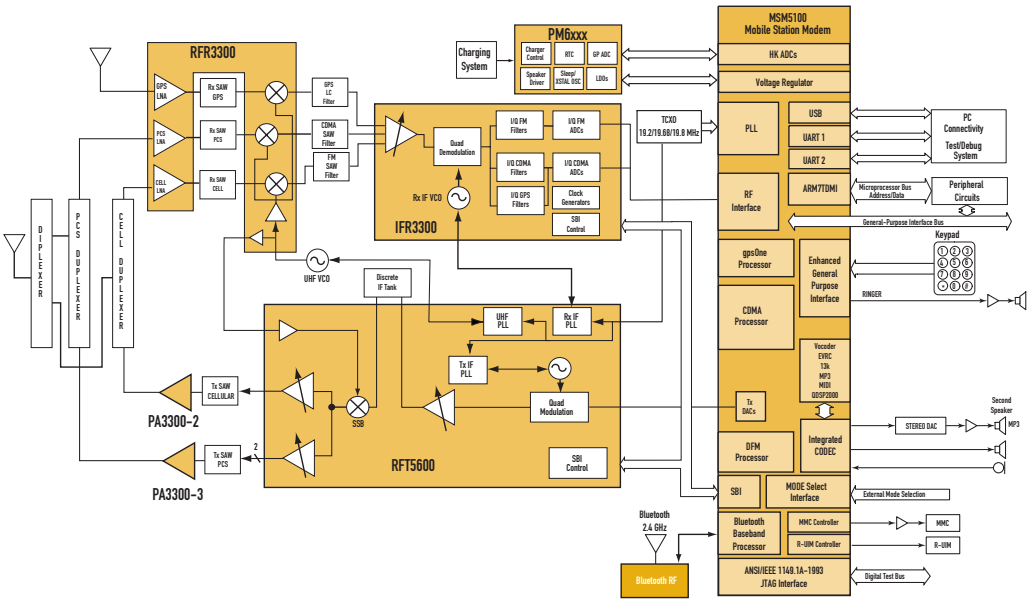
## RFT5600 DEVICE FEATURES

operating modes are controlled by the MSM chip and include band selection and frequency programming, gain control, selective power-down, and punctured CDMA transmission (gated Tx power) for optimal power savings and talk-time improvement. The RFT5600 device is fabricated on an advanced BiCMOS process which that accommodates both precision high-frequency analog circuits and low-power CMOS functions, and is provided in a 48-pad BCC++ plastic package that includes an exposed center ground slug for improved RF grounding, mechanical strength, and thermal continuity.

- Full upconversion from analog baseband to RF Tx
- Tx functionality includes integrated I/Q modulator, IF VCO/PLL, SSB upconverter, VGA, and driver amplifiers
- Includes integrated UHF and Rx and Tx IF PLLs
- Dual-band operation includes cellular and PCS/IMT-2000
- Tri-mode operation includes CDMA, 3G CDMA 1xMC, and AMPS
- Eliminates image-reject filter between upconverter and driver amplifier
- Includes one cellular and two PCS/IMT-2000 driver amplifier outputs (eliminating external switches for dual or differential outputs)
- Tx power control through 85 dB dynamic range VGA
- Puncture mode (gated Tx power) for extended talk-time performance
- Tx analog baseband interface compatible with MSM3100™, MSM3300™, MSM5105™, MSM5100™ and MSM5500™
- UHF and Rx and Tx IF PLLs include an input buffer to accept external VCO signals
- UHF PLL includes charge pump boost mode for fast acquisition
- All three PLLs independently power-down via serial bus interface (SBI) control
- All three PLL synthesizers share TCXO and LOCK pins
- Supply voltage from 2.7 V to 3.3 V
- BCC++ 48-pad plastic chip scale package (7 mm x 7 mm x 0.8 mm)

As with all QCT products, the RFT5600 device features the unparalleled customer support you have come to expect from your partner of choice for complete wireless communications solutions. QCT is committed to providing innovative multi-mode, multi-network chipsets, system software and development tools that will help ensure your competitive success in the wireless communications marketplace for 3G and beyond.

**Figure 2. RFT5600 used in QCT's MSM5100 Chipset Solution (Tri-mode plus GPS Configuration shown)**



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