

BCM2002X 2.4 GHZ BLUETOOTH™ FRAC-N RADIO

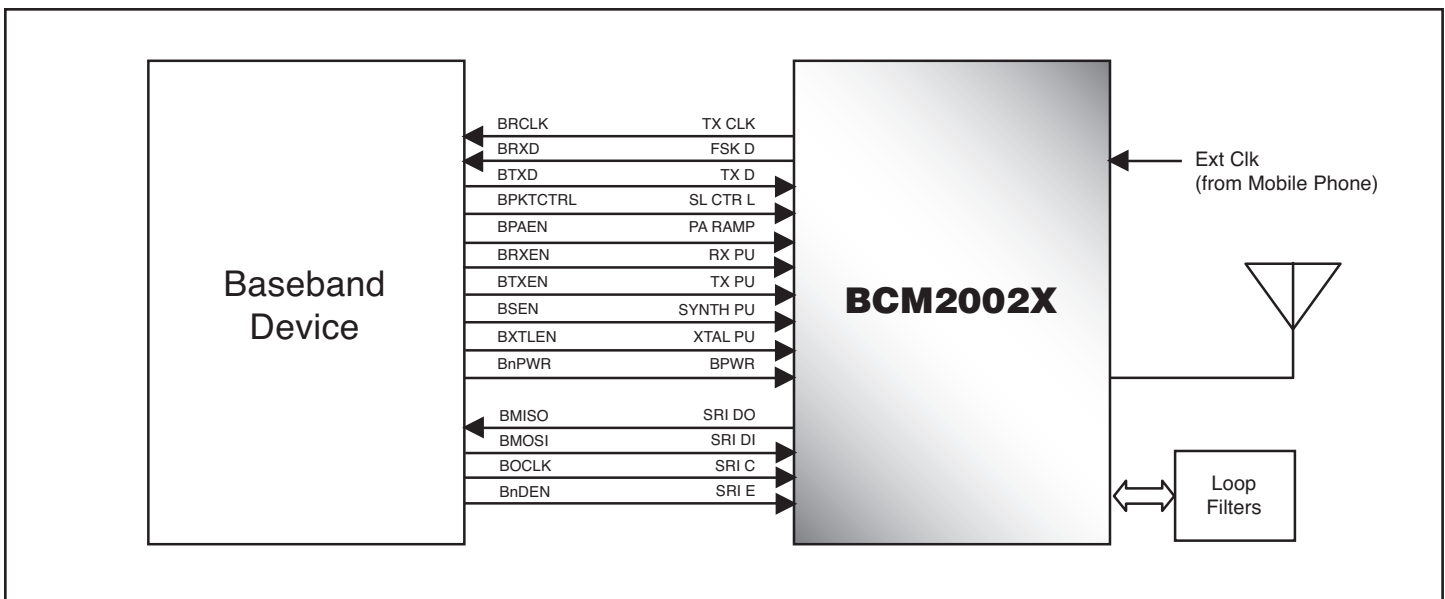
BCM2002X FEATURES

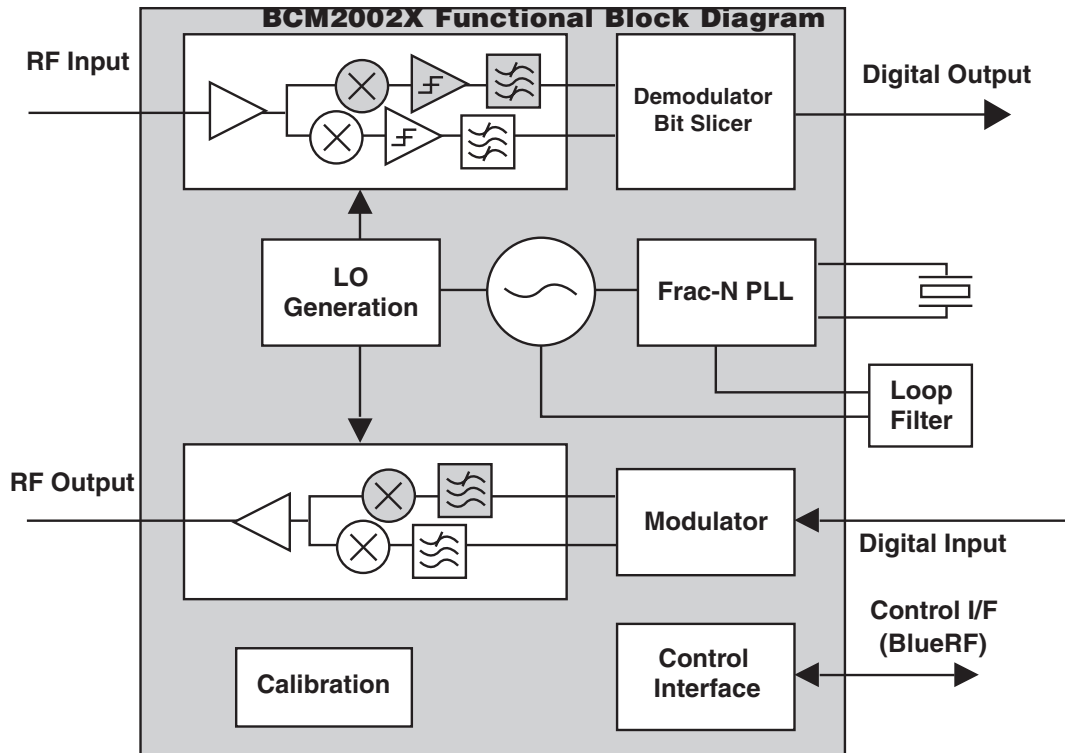
- **BQB qualified Bluetooth V1.1 radio transceiver**
- **Fractional-N frequency generation**
 - Supports 12, 13, 19.2, 19.68, or 19.8 MHz reference frequencies
- **Differential RF interface**
- **Typical -80 dBm receiver sensitivity under high interference environments**
- **Typical +3 dBm RF output power satisfied requirements for Class 2 operation**
- **Strong spurious emissions performance**
 - Minimal filtering required to meet mobile phone integration requirements
- **Excellent blocking performance**
 - Minimal filtering required to meet mobile phone integration requirements
- **Highly linear receiver exceeds Bluetooth specifications**
- **Meets FCC radiated emissions requirements without RF filtering or shielding**
- **Low power consumption**
- **Built-in digital RSSI**
- **Programmable PA gain**
- **8mm x 8mm, 52-pin LPCC standard package**

SUMMARY OF BENEFITS

- **Ideal for mobile phone integration**
 - Designed to handle the very harsh environment of mobile phones while maintaining high radio performance and optimizing overall phone performance.
 - In-band and out-of-band blocking performance significantly exceeds Bluetooth requirements.
 - Fractional-N frequency generation technology eliminates the need for a dedicated reference crystal, which is an additional source of RF noise.
- **Monolithic implementation in a standard digital CMOS process with minimal external components provides a manufacturable low-cost Bluetooth RF/IF solution.**
- **On-chip auto-calibration eliminates process variation across components and mitigates temperature variation, enabling the chips to be used in high-volume mobile phone applications.**
- **The BlueRF RXMODE2 unidirectional baseband interface supports connection to a wide variety of baseband devices.**
- **Applications:**
 - GSM, CDMA, GPRS, and WCDMA mobile phones

BCM2002X BlueRF Frac-N Radio Application Example





The **BCM2002X** is a Bluetooth 1.1 compliant integrated radio transceiver device operating in the 2.4 GHz band. It is ideal for integration in mobile phone applications where the radio has been designed to handle the harsh environments of mobile phones to provide the highest communication link quality of service.

The **BCM2002X** uses fractional-N frequency generation technology to synthesize the different reference frequencies for mobile phone applications. The fractional-N technology eliminates the need for a dedicated reference crystal, which lowers BOM cost and eliminates an additional RF noise source.

The receiver front-end consists of a low-noise amplifier and an image reject mixer. Balanced mixer structures fed by accurate quadrature LO signals allow an excellent noise figure and strong image rejection.

A low IF frequency allows for high performance amplifier and filter designs in CMOS. The bandpass filter structure features self-calibration circuitry that automatically adjusts circuit elements to compensate for any process variation. This eliminates tuning and ensures that process and temperature variation are uniform across the devices. The IF amplifiers provide a limiting function so that the following stages always get a constant signal level regardless of the RF input level. An RSSI signal is also generated in these amplifiers for the system to determine signal strength. The signal is then filtered further, demodulated, and finally sent to a bit slicer to generate logic level data output.

The **BCM2002X** is controlled via a BlueRF unidirectional interface. BlueRF is a Bluetooth industry-standard specification that provides compatibility between Bluetooth RF and baseband chips. This interface provides control for the various sections of the chip, defines data transfers and allows access to the various internal registers of the device.

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