Radio

No external trimming is required in production

Operation with common TX/RX terminals simplifies external matching circuitry and eliminates external antenna switch

Extensive built-in-self-test minimizes end product final test time

Full RF reference designs are available

Transmitter

Up to +4dBm RF transmit power with level control from the on-chip 6-bit DAC over a dynamic range greater than 30dB

Supports Class 2 and Class 3 radios without the need for an external power amplifier or TX/RX switch

Receiver

Integrated channel filters

Digital demodulator for better sensitivity and co-channel rejection

Digitized RSSI available in real time over the HCI

Fast AGC for enhanced dynamic range

Power Supply Block

Power supply block gets 3.6 VDC power from battery or external DC power source, and distributes this power to RF block, Audio block and Bluetooth chip through its LDO voltage regulator.

Bluetooth Chip Block

The Bluetooth Chip block includes CSR BC02 base band IC, a flash memory, and crystal for clock. The Bluetooth protocol stack and its related profiles are loaded inside the flash memory as a firmware to drive this hands-free device. The CSR BC02 base band IC has its own RAM, DSP, microprocessor as well as a 2.4 GHz radio unit inside. This base band IC communicates with the Audio block through its PCM pin set. It also uses its PIO pins for man-machine interface, power detector, and control functions with the RF block.

RF Block

Since this hands-free device is a Bluetooth Class 2 device with a maximal output power of less than 4 dBm, the RF block is quite simple in its structure. It includes an antenna, a band pass filter and a balun to work with the 2.4 GHz radio unit inside the BC02 IC. This block works as the common TX/RX terminal without external antenna switch. It functions as the RF transmitter and receiver for this hands-free

device.

The transmitter outputs a maximal power of less than 4 dBm without external power amplifier.   It has level control from the on-chip 6-bit DAC over a dynamic range greater than 30dB.

The receiver integrates channel filters and digital demodulator for better sensitivity and co-channel rejection. It also has a fast AGC for enhanced dynamic range.

Audio block

The audio block is made of a codec, an audio AMP, a microphone and a speaker. The microphone takes the audio signal from a user to the codec.   The codec converts the audio signal to PCM code and sends it to the Bluetooth chip, eventually through the RF transmitter to a remote audience.   The Bluetooth chip also sends PCM code, received from a remote Bluetooth unit, to the codec.   The codec then converts this PCM code to audio signal and sends it to the AMP, and through the AMP to the speaker.