Description of Operation

EUT is a PHILIPS 9@9Q with Bluetooth IC BGB208. The BGB208 combines the Bluetooth RF part, protocol stack, Link Controller (LC), Link Manager (LM), and Host Controller Interface (HCI) firmware of the Bluetooth system specification in one SiP with embedded software. Together with an antenna and a reference clock this device forms a complete Bluetooth solution. In most cases this SiP will be attached to a host, for example a GSM baseband controller or a PC processor.

The BGB208 is designed to be used for wireless links operating in the globally available ISM band, between 2402 and 2480 MHz. The radio part is composed of a fully integrated, state-of-the-art near-zero-IF transceiver chip, an antenna filter for out-of-band blocking, a TX/RX switch, TX and RX baluns, and a basic amount of supply decoupling.

The device is a "Plug-and-Play" package that needs only 6 additional decoupling components next to an antenna and reference clock for proper operation. Robust design allows for untrimmed components, giving a cost-optimized solution. Demodulation is done in open-loop mode to reduce the effects of reference frequency breakthrough on reception quality. An advanced offset compensation circuit compensates for VCO drift and RF frequency errors during open-loop demodulation, under control by the baseband processor. The circuit is integrated on a laminate substrate. It is connected to the main PCB through a HTQFN48 footprint. The RF port has a normalized 50 Ω impedance and can be connected directly to an external antenna with a 50 Ω transmission line. A high-dynamic range RSSI allows near-instantaneous assessment of radio link quality, and is used for output power-control purposes.

The Baseband part and the RF interface of the SIP are designed to operate at 1.8V. But, the Baseband clock intefaces are designed to operate at 1.2V. The RF part of the SiP is designed to operate from 1.8 V nominal supplies. Separate ground connections are provided for reduced parasitic coupling between different stages of the circuit. There is a basic amount of RF supply decoupling incorporated into the circuit.

The industry standard ARM7TDMI microcontroller with low power consumption is integrated together with a ROM memory and a SRAM. There are no provisions for external controllers to directly access on-chip data memory. Communication with an external host, for example a PC, GSM or PDA, is handled via the Host Controller Interface.