LPP0208

Operational Description

EN001 Rev 2

Revision History

Date	Rev	Author	Description
5/14/10	1	B. Wrightson	Preliminary
6/14/10	2	R Holden	Update

1.0 GENERAL DESCRIPTION

The LPP0208 Module utilizes the Texas Instruments Locosto digital signal processor/digital radio processor (DSP/DRP) integrated circuit, a Texas Instruments MSP430 microcontroller, and a Texas Instruments GPS chip solution. The DSP/DRP is highly integrated and provides all modem functions when combined with the TI Triton Lite analog and power management IC. RF amplification and routing is accomplished with a combined RF power amplifier/switch module. The GPS device is a self contained solution requiring minimal control interface. System sequencing and control is maintained by the MSP430.

The LPP0208 module is a compact, wireless OEM module that utilizes the Global System for Mobile Communications (GSM) and General Packet Radio Services (GPRS) international communications standard to provide two-way wireless capabilities via GSM services. This GSM/GPRS module is combined with a Global Positioning System (GPS) chipset to provide physical location, an MSP430 processor to ensure very low power standby configurations, and vibration sensor to detect movement of the module. The LPP0208 module is a fully Type-approved GSM/GPRS device, enabling application-specific, two-way communication and control.

The small size of the LPP0208 module allows it to be integrated easily into the application and packaging.

The LPP0208 module provides 4 frequency bands for compatibility with worldwide frequency standards. 850/1900 frequency bands are primarily used in North and South America, while 900/1800 bands are used throughout the world. The LPP0208 offers all four bands for use worldwide.

2.0 RADIO INTERFACE

The Locosto DRP and RF amplifier/switch provide the complete RF front-end for the GSM/GPRS functions.

The receiver section encompasses the RF switch, RF band-select SAW filters and the DRP. The DRP is directly integrated to the DSP on the same IC. All down conversion and signal processing is done directly within the DRP.

The transmit section consists of a direct connection from the DRP through the power amplifier/switch module to the RF connector port. All carrier generation and modulation is performed within the DRP.

The DSP/DRP uses a digitally controlled crystal (26 MHz) oscillator (DCXO) that integrates the reference oscillator and varactor functionality.

The LPP0208 is a quad-band GSM/GPRS OEM module. In North America it will be running in the GSM (850 MHz) band and the PCS (1900 MHz) band.

The module is/will be certified by PTCRB and uses GMSK modulation via a Digital Signal Processor.

Transmit Frequencies Used in North America:
GSM Band: 824 MHz to 849 MHz
PCS Band: 1850 MHz to 1910 MHz

3.0 BASEBAND INTERFACE

The Locosto DSP provides all digital interfaces and control of the system. The Triton Lite analog and power management chip controls all power domains and analog interfaces when the modem function is enabled. It utilizes input from a 32kHz crystal oscillator to provide real-time clock and synchronization for external interfaces. Triton also performs digital to analog translation and amplification for all audio interfaces.

4.0 GPS INTERFACE

The GPS frontend section only requires a SAW filter, all other signal conditioning including the LNA, down conversion and signal processing is integrated onto the GPS IC.

The GPS chip solution uses a temperature controlled oscillator (TCXO) running at 38.4 MHz.

5.0 MSP430 MICROCONTROLLER

A low power microcontroller is used as a system controller to sequence when the GPS and/or the GSM modem are enabled. The microcontroller is a self contained system requiring a minimum number of external components. The clock source for the microcontroller is a 32kHz crystal oscillator which is internally multiplied up to a desired frequency.