Enfora, L.P.
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General Description

The EDG0200 PC Card is a quad-band (GSM, EGSM, DCS, PCS) wireless modem that is capable of operating in GSM, GPRS, and EGPRS modes.

The card utilizes a Silicon Laboratories Si4210 Transceiver. This transceiver is highly integrated and provides virtually all radio functions. An RFMD 2705 handles the 8-PSK modulation in the EGPRS mode.

Circuitry & Devices Provided for Determining & Stabilizing Frequency

System Reference Clock:

The transceiver uses a 26 MHz Digitally Controlled Crystal Oscillator (DCXO) to generate a precise system reference clock. Any initial offset error in the external crystal can be calibrated during factory test if needed. This clock is initially accurate to within 5.7 ppm. After attaching to the network, the clock is within 0.1 ppm.

Frequency Synthesizer:

The frequency synthesizer uses an integrated RF VCO, Varactor, and loop filter.

The IF & RF output frequencies are controlled via software. The RF VCO is used in both transmit and receive modes.

Transmitter:

The transmit section can operate in GMSK and 8-PSK modulation modes.

In GMSK mode, the baseband I/Q signals modulate the OPPL (offset phase-locked loop). The power amplifier operates in a saturated non-linear mode and the baseband ramp signal is applied directly to the power amplifier.

In 8-PSK mode, the OPLL is un-modulated and held in a CW (carrier wave) mode to act as a local oscillator that up-converts the baseband I/Q signal. The power amplifier operates in a constant gain linear mode and the baseband ramp signal is applied to the VGA (variable gain amplifier.

Circuitry & Devices Provided for Suppression of Spurious Radiation

In GMSK mode, low-pass filters before the OPLL phase detector reduce the harmonic content of the Quadrature Modulator and feedback mixer outputs.

In 8-PSK mode, the low bands (850 & 900 MHz) have a band-pass filter incorporated between the modulator and the PA.

In both modes, low-pass filters are integrated into the RF switch (RFS).

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Circuitry & Devices Provided for Limiting Modulation

All modulation waveforms are generated/controlled by the DSP in the Analog Baseband integrated circuit.

Circuitry & Devices Provided for Limiting Power

The RF Power Amplifier's output level is controlled from an analog voltage generated by the Analog Baseband integrated circuit.

In GMSK mode, the Power Amplifier provides an integrated power control loop that maintains the desired power output level.

In 8-PSK mode, the Power Amplifier is in a constant gain mode and power is controlled via a power control loop in the 2705 modulator.