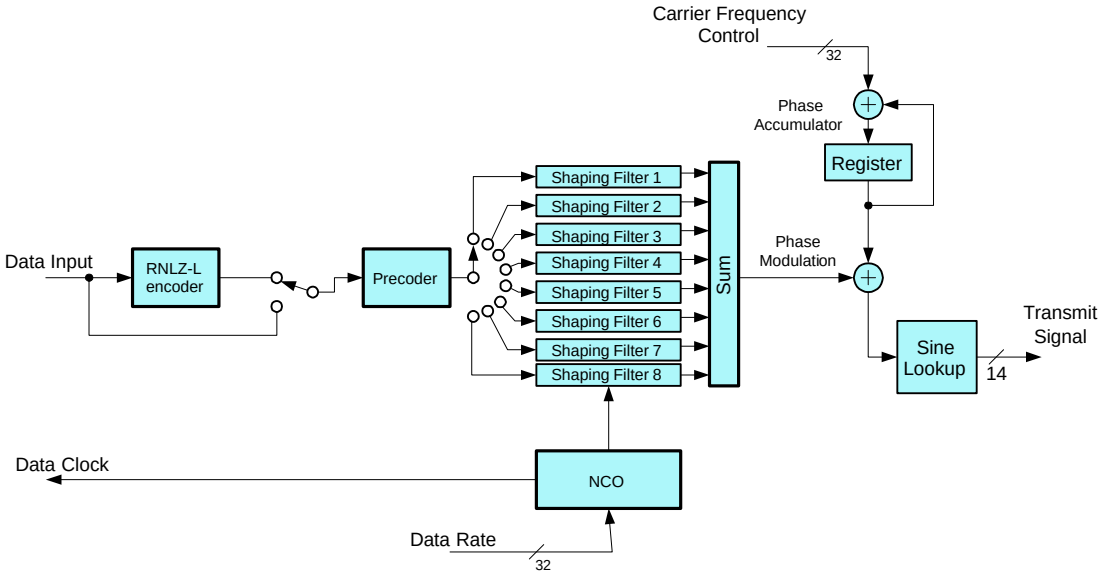
# ARTM SOQPSK-TG
# Shaped Offset QPSK Modulator

Feb. 2009




## Features

- Compliant with Advanced Range Telemetry (ARTM) tier 1 SOQPSK-TG
- Continuously variable bit rate to 25 Mbps.
- Continuously variable carrier frequency to 50 MHz.
- High Spectral Purity (60 dB bandwidth = 2 x bit rate).
- Digital Stability.
- Suitable for low power applications.
- Low resource utilization
- Peak-to-average power ratio of 0 dB - ideal for power starved transmitters.
- Evaluation board available

Shaped Offset Quadrature Phase Shift Modulation provides the benefits of constant amplitude and high spectral efficiency. This waveform is ideally suited to power starved transmitters which employ a non-linear power amplifier. This all-digital implementation provides continuously variable data rate and continuously variable carrier frequency. This flexibility simplifies the interface to an RF up-converter and power amplifier.

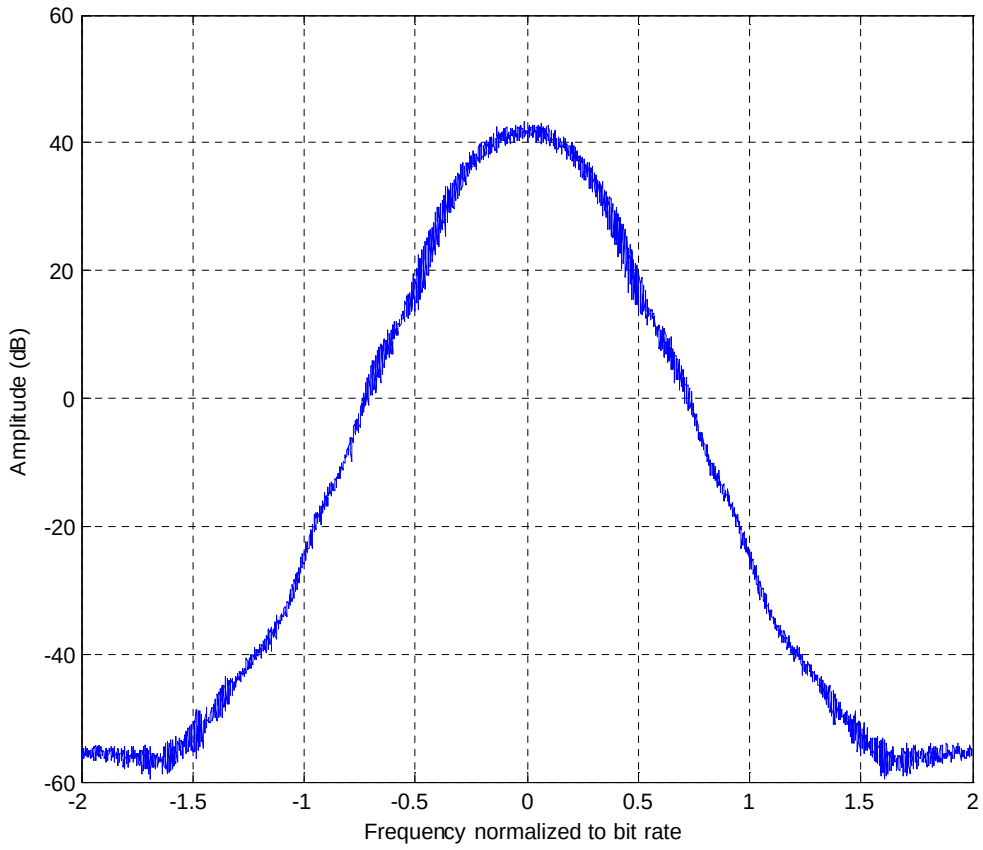
.This modulator complies with the open government standard used for range telemetry, but is suitable for any remote sensor application.

Contact Mike Paff 650 941 2954 (mpaff@paffengineering.com) for more information

## **FPGA Resource Utilization** (Altera Cyclone III)

| | Logic Cells | ROM (bits) | DSP Elements |
|---|---|---|---|
| Modulator | 821 | 319K | 4 |

Modulated Signal Spectrum

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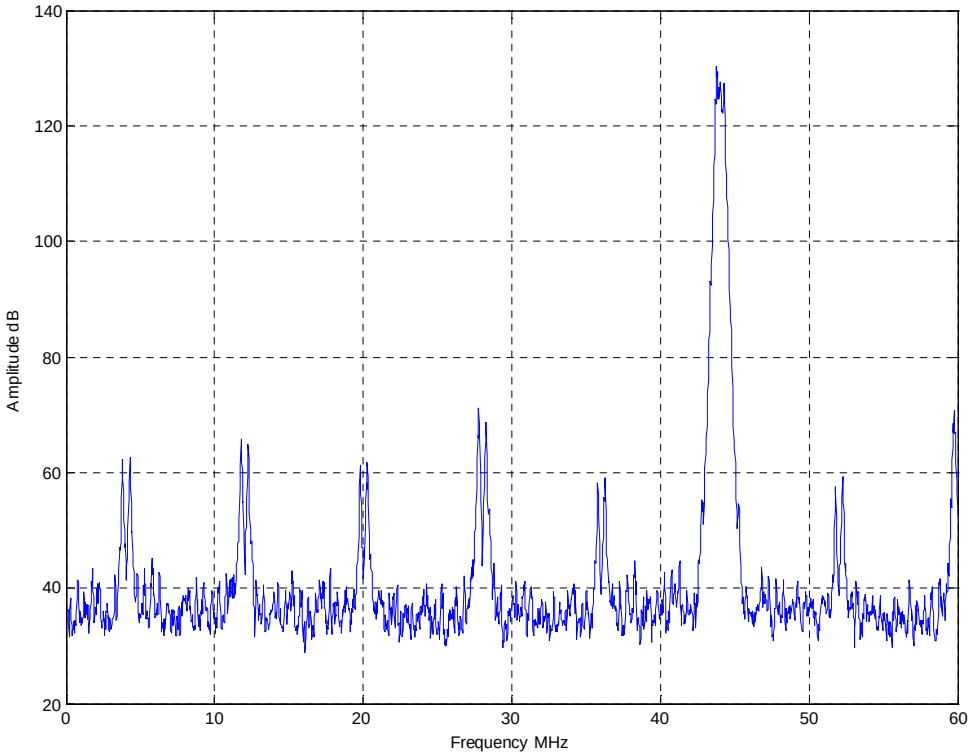


Transmit spectrum with: sampling clock = 120 MHz, data rate = 1 M bps, carrier frequency = 44 MHz

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