



Square Peg Product Brief

Communications Inc.

BGAN Modem Subsystem (BMS)

Features

- Complete Inmarsat BGAN UT modem subsystem (except Turbo decoder, available separately)
- Derived from SPCI's "Gold Brick" BGAN Physical Layer Tester (BPLT)
- Available with support for UT Classes 1-3 (Land transportable), 8-9 (Maritime), 10-11 (Land mobile).
- Equalizer available for UT Classes 6-7 (Aeronautical)
- Meets all Inmarsat transmitter and receiver specifications
- Easily integrated with BGAN protocol stack
- C++ fixed-point software implementation
- Configurable frequency acquisition range
- Internal code rate AVP detection and handling
- Demodulator statistics available to application

Performance Highlights

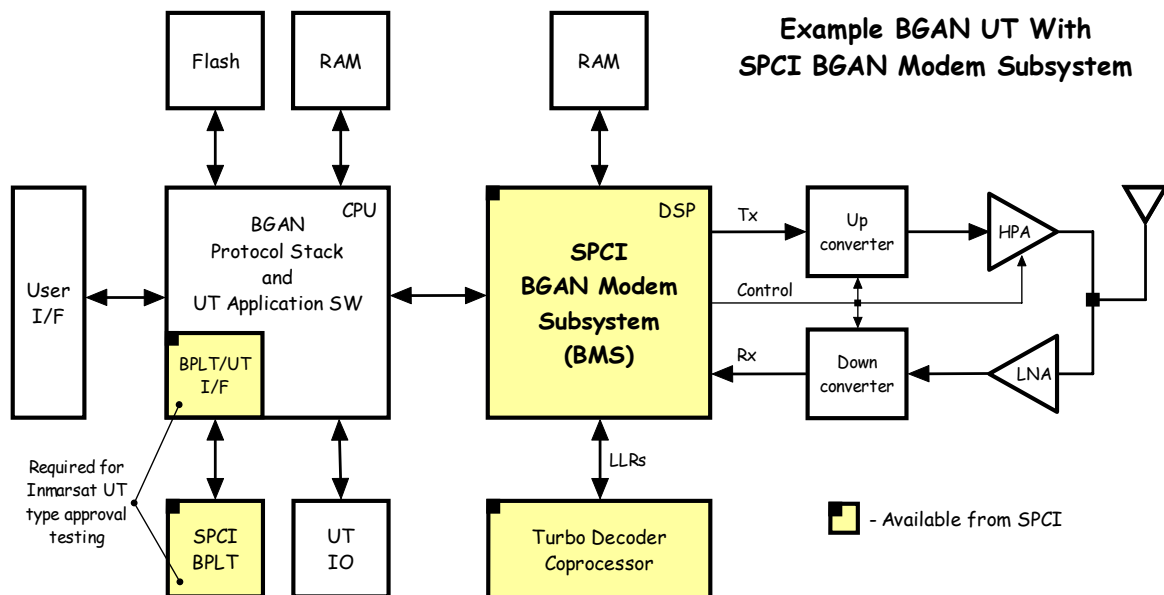
- Meets all Inmarsat PER specs, margin > 0.25 dB
- Compliant acquisition and recovery from blockage
- Fast global bearer acquisition (PER $\leq 1e-3$ within 5 frames over $\pm 2\text{kHz}$)
- Compliant code rate detection and misidentification performance
- Compliant C/No estimation
- Large dynamic range demodulator typically removes need for hardware receiver AGC

DSP Requirements

- Compatible with 330 MHz C64x+
- 2 MB external RAM (alternatives available for reduced external RAM)
- Internal RAM required is dependent on DSP cache but nominally 128 kB

Supported Platforms

- TMS320C64x, C64x+
- Readily customizable for other platforms



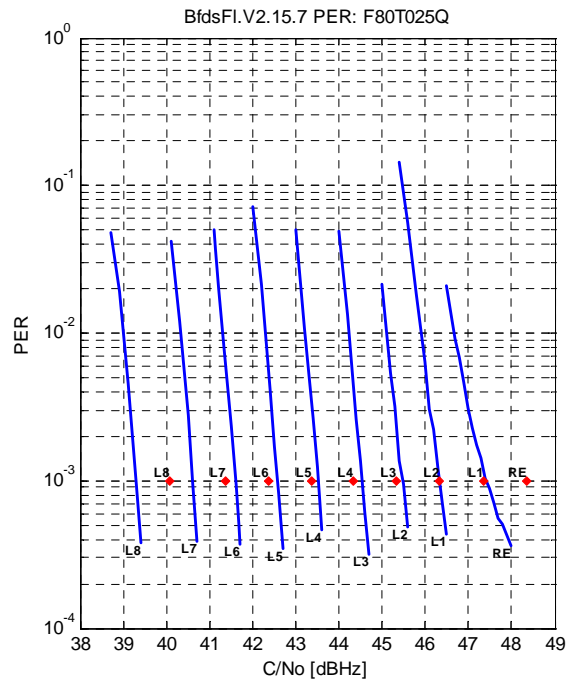
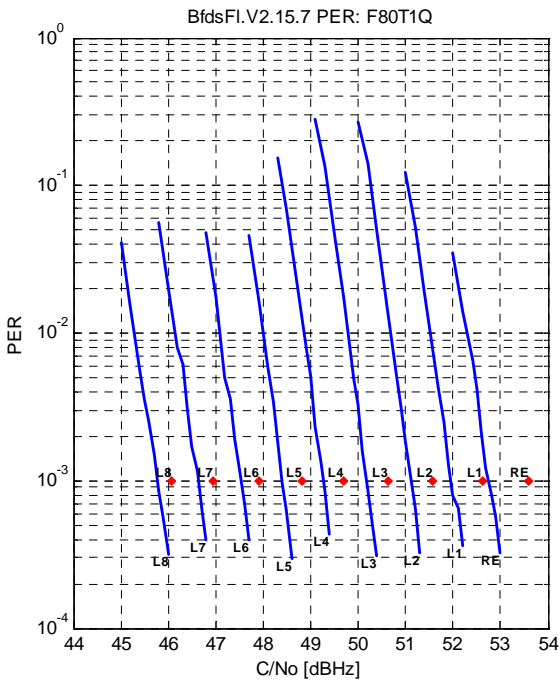
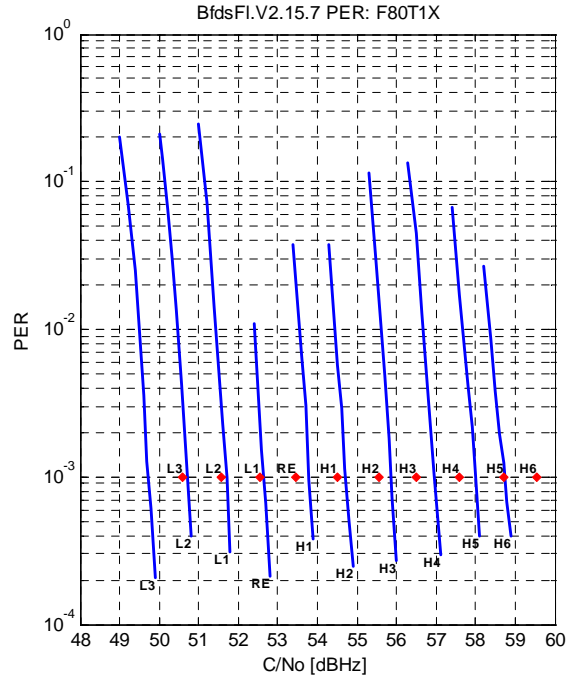
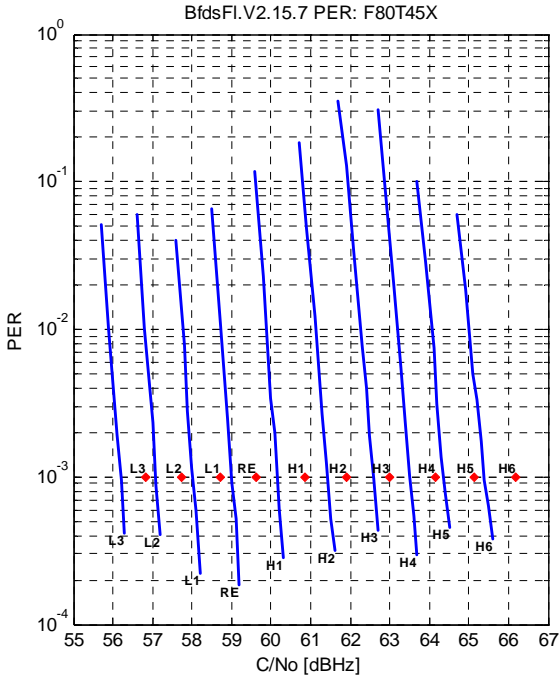
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PER Performance (Non-Fading)

- Continuous phase noise (more severe than Inmarsat specification):
 10Hz: -33 dBc/Hz,
 100Hz: -60 dBc/Hz,
 1kHz: -74.5 dBc/Hz,
 10kHz: -79 dBc/Hz,
 100kHz: -87 dBc/Hz

- Discrete phase noise = -30 dBc, 100 Hz
- Phase/gain imbalance = 1.5°, 0.15 dB
- Doppler at 30 Hz/s, max = 48Hz
- Clock error = 5 ppm (3 ppm for T4.5X)
- ACI of +6 dBc at ±10kHz (T0.25), ±40kHz (T1), ±200kHz (T4.5)
- Turbo decoder iterations: 6



- Note: Red diamonds show Inmarsat specification for each code rate.