Software Specification

The satTRAC Modem/BBU provides telemetry, ranging, and commanding on a next-gen software radio platform consisting of a high-availability commercial off-the-shelf server, a high-performance signal converter, and one or more software applications.

The tables below summarize the specifications for the GROUP2 application. Please refer to the satTRAC top-level data sheet for an overview of the innovative capabilities of satTRAC. Refer to the hardware data sheet for a summary of the signal converter specifications.

This application supports Boeing-601, Boeing-702, Lockheed Martin-A2100, and similar commanding buses.

Command (Transmit)	Specification
Modulation	3 tone FSK
Symbol Rate	50 bps to 10 kbps
Modulation Index (PM)	0.0 to 3.0 radians
Frequency Deviation (FM)	Fully Programmable
Tone Frequency	1 kHz to 2 MHz
Tones	0, 1 , Execute, Sync
FSK Symbol Mode	NRZ, RZ
Command Data Input	Network, Serial, GUI, or Internal BERT

Telemetry Test (Transmit)	Specification
Modulation	BPSK/PM or BPSK/FM
Symbol Rate	250 sps to 500 ksps
Modulation Index	0.0 to 3.0 radians
Number of Subcarriers	2
Subcarrier Frequency	8 kHz to 4 MHz
Convolutional Encoding	Rate 1/2; K=7
Reed-Solomon Encoding	(255, 223)
Reed-Solomon Interleave	0 to 8 frames
PCM Coding	NRZ-L/M/S, BIΦ-L/M/S
Data Input	Network, Serial, File, GUI, or Internal BERT

Command Echo (Receive)	Specification
Demodulation	3 Tone FSK
Symbol Rate	50 bps to 10 kbps
Tones	0, 1, Execute, Sync
FSK Symbol Mode	NRZ, RZ
Command Echo Data Output	Network or Internal BERT

Telemetry (Receive)	Specification
Demodulation	BPSK/PM or BPSK/FM
Symbol Rate	250 sps to 500 ksps
Number of Subcarriers	4
Subcarrier Frequency	8 kHz to 4 MHz
Acquisition Frequency Range	+/- 200 kHz with Aided PLL
Carrier Recovery Bandwidth	Fully Programmable per Symbol Rate
Symbol Recovery Bandwidth	Fully Programmable per Symbol Rate
Viterbi Decoding	Rate 1/2; K=7
Reed-Solomon Decoding	(255, 223)
Reed-Solomon Interleave	0 to 8 frames
PCM Decoding	NRZ-L/M/S, BIΦ-L/M/S
Implementation Loss	< 1 dB
Telemetry Data Output	Network, Serial, or Internal BERT

Tone Ranging	Specification
Tone Frequency	1 kHz to 500 kHz
Multiple Tone Sets	ESA, ESA-Like, USB or User Determined
PM Mod Indices	0.0 to 3.0 radians
Integration Time and Relative Tone Power	Fully Programmable
Min and Max Delay	Fully Programmable
Implementation Loss	< 0.5 dB

- **Built-In Software Capabilities -** Each satTRAC application includes an integrated full-time Spectrum Analyzer, Oscilloscope, editable GUIs to streamline operations, Automated Test Script Runner and secure Linux operating system.

- **Optional Software Features -** satTRAC's ever-increasing list of optional integrated capabilities include: Data Recorder/Reproducer, Front End Processor (FEP), Network Gateway, Channel Emulation, and custom security policies.