

ST2131 trainer provides a basic understanding of the concepts behind CDMA, and various issues that need to be considered in the design of a DSSS system. These include generation of various pseudorandom (PN) codes like Gold, MLS & Barker with programmable tapplings, variable chip rate, and digital modulations BPSK, QPSK & digital AWGN noise with programmable FIR low pass filter. Bit error rate (BER) measurement with known data sequence, overall data rate dependency parameters, spreading & despreading with DSSS, SNR control, offset control & so on can be performed on model ST2131A.



Technical Specifications

- Direct Sequence Spread-Spectrum (DSSS) Modulator, Demodulator
- Programmable chip rates upto 10 M chip / s
- Spreading codes :
 - Gold sequences (up to $2^{23}-1$ chips) Maximal length sequences (max length $2^{23}-1$ chips) Barker codes (length 11,13)
- Code modulation: BPSK / QPSK / OQPSK with output spectral shaping filter : Raised cosine square root filter with 20 %, 25 %, or 40 % rolloff
- Internal generation of pseudo-random bit stream and unmodulated carrier for test purposes
- Built-in channel impairments generation :
 1. Additive White Gaussian Noise
 2. Frequency offset (Doppler)
- Sequential code search
- 4-bit soft-quantized demodulated bits
- Extensive monitoring : Receiver lock, Carrier frequency error
- **Power Supply** : 220 V \pm 10%, 50 Hz / 60 Hz on request
- **Power Supply** : 2 VA (approx.)
- **Dimensions (mm.)** : W 340 \times D 241 \times H 105

Standard Accessories

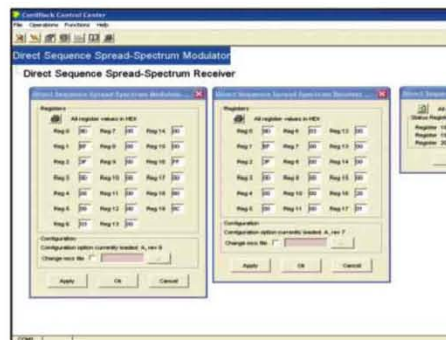
- Software CD-Rom
- Theory manual
- Programming software
- Operating & applications manual
- Serial interface cable
- Demo VCD

Optional Accessories

- 8 Channel Logic Analyzer

Experiments that can be performed using ST2131

- To study theory of Direct Sequence Spread Spectrum Modulation and Demodulation (DSSS)
- Selection and study of various PN codes (MLS, GOLD, BARKER)
- Generate (spreading) DS-SS modulated signal
- To demodulate (despreading) DS-SS modulated signal
- Selection & comparative study of various code modulation techniques: BPSK / QPSK / OQPSK
- Modulation and Demodulation using internal generation of 2047 bit PN sequence as modulator Input and unmodulated carrier
- Spreading and Despreading using additive white Gaussian Noise Generator and frequency offset
- To perform spreading and despreading using extensive monitoring at the receiver for code lock, carrier lock, carrier frequency offset and code acquisition
- To study the effect of Synchronization Sequential, code search in Despreading
- Voice Communication using DSSS



Software Window

