



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.

#### Technical Specifications

- ◆ Direct Sequence Spread-Spectrum (DSSS) Modulator, Demodulator
- ◆ Programmable chip rates upto 10 M chips/s
- ◆ Spreading codes :  
Gold sequences (up to 2<sup>11</sup> chips) Maximal length sequences (max 2<sup>23</sup> length 2<sup>11</sup> 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

#### Experiments that can be performed using

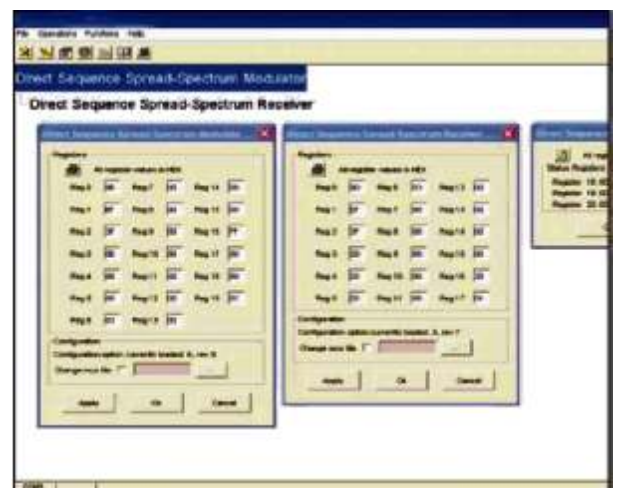
- ◆ To study theory of Direct Sequence Spread Spectrum Modulation and Demodulation (DSSS)
- ◆ Selection and study of various PN codes (MLS, GOLD, BARKER)
- ◆ Generate (spreading) DS-SS modulated signal
- ◆ To demodulate (despreading) DS-SS modulated signal
- ◆ Selection & comparative study of various 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

#### Standard Accessories

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

#### Optional Accessories

- ◆ 8 Channel Logic Analyzer



Software Window

Note: Specifications are subject to change.

**Tesca Technologies Pvt. Ltd.**

IT-2013, Ramchandrapura Industrial Area, Sitapura Extension,  
Near Bombay Hospital, Vidhani Circle, Jaipur-302022, Rajasthan, India,  
Tel: +91-141-2771791 / 2771792; Email: info@tesca.in, tesca.technologies@gmail.com  
Website: www.tesca.in