



# Time Frequency Analyzer

The CRC-developed Spectrum Explorer (SE) is a flexible software solution which provides a family of sophisticated applications that perform spectrum surveillance and analysis.

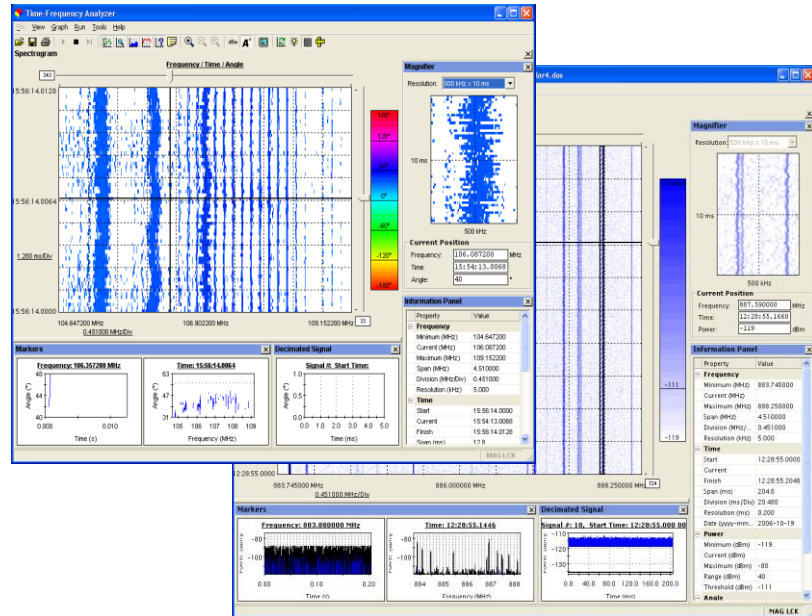
Installed on a Windows-based PC, SE works with a broad range of commercial RF receiving and digitizing hardware. SE supports the digital signal processing and user-friendly GUI control needed by specialists to assess the usage and quality of the radio spectrum.

SE core applications:

- Wideband Scanner (WBS)
- Spectrum Analyzer (SA)

The Time Frequency Analyzer (TFA) is an optional SE application which provides in-depth views of spectral activity for a fixed band over time. The TFA continuously acquires live data from the radio spectrum for signal intercept, detection and analysis.

Multiple viewing perspectives allow complete observations of spectral variations over time.



## Major Features

- Parameter extraction
  - Signal power, Signal-to-noise ratio (SNR)
  - Angle of Arrival (AoA), AoA uncertainty
  - Signal start time and duration
  - Modulation format, Baud rate
- Multiple Displays
  - Time/Frequency / Power
  - Time/Frequency / AoA
  - Markers-Power / AoA vs Time, Power /AoA vs Frequency
  - Magnifier/Zoom
  - Decimations-snapshot analysis over time
  - Active signal parameter list
- Complementary interworking with other SE applications
  - WBS, DF, SA

## **Specifications**

Spectrum Explorer's modular design supports numerous configurations of tuner/ADC subsystems and can operate on several generations of Windows-based PCs. Your system's performance will depend on your chosen hardware and number of concurrently running applications.

### **General specifications**

Display bandwidth	4.5 Mhz -20Mhz
Snapshot time interval	.05 - 5 secs

### **Signal List parameters**

Signal ID: An index to identify the current signal  
Fc: The estimated centre frequency  
BW: The estimated bandwidth  
Power: The estimated power.  
SNR: The signal-to-noise ratio of the signal.  
Modulation: The recognized modulation type of the signal.  
Baudrate: The symbol rate of the signal (for digital modulations)  
AOA: The estimated angle-of-arrival  
 $\pm$ AOA: The angle-of-arrival uncertainty  
Start Time: Time at which the signal started  
Duration: Signal duration in time

## **Operations**

The TFA is accessed from the Spectrum Explorer's Wideband Scanner application. When a detected signal or band requires a more comprehensive analysis, the TFA is launched and tuned to cover the spectrum of interest. Radio spectrum snapshots taken by the TFA are then displayed as time vs. frequency vs. power or time vs. frequency vs. Angle of Arrival. AoA measurements require the DF application and a configuration with 2 tuner/ADC subsystems.



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