



SPECTRE (Special Purpose Emitter Collection & Tactical Receiving Equipment)

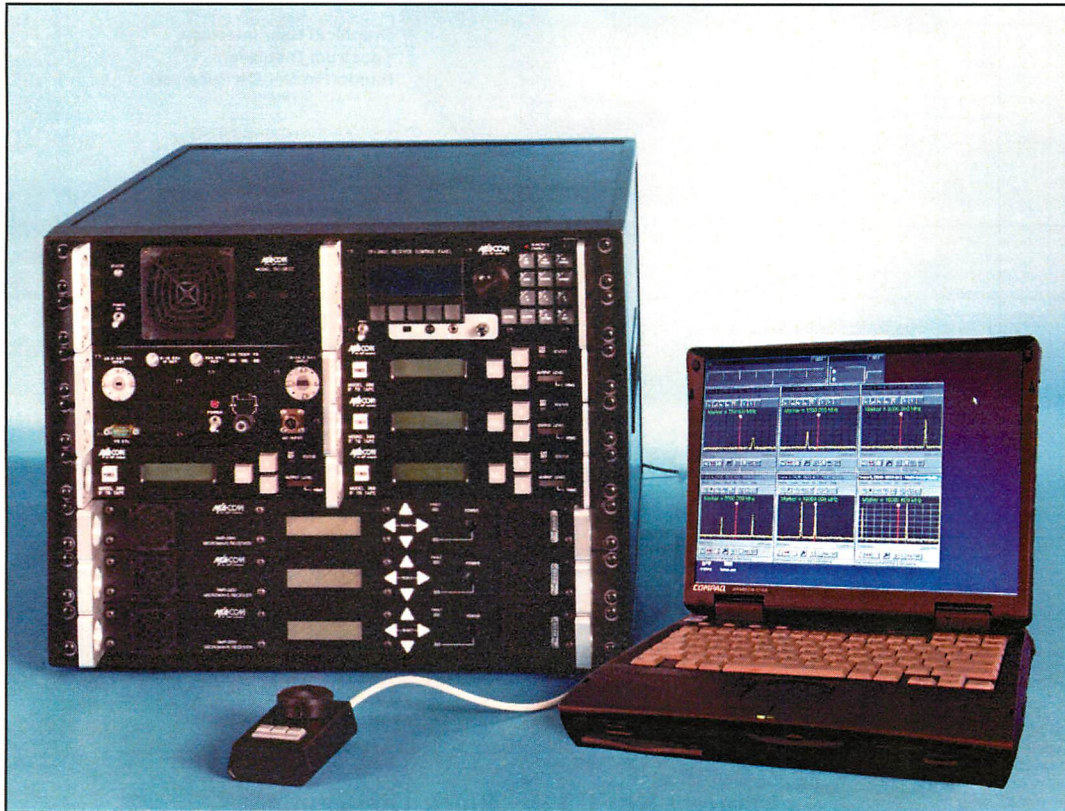


Figure 1 Typical SPECTRE System with Laptop PC
for Command, Control, and Display

FEATURES

- Flexible Carry-on System for ELINT or COMINT Survey and Analysis
- 0.5 - 40 GHz Frequency Coverage
- Programmable RF Spectrum and IF Signal Analysis Displays
- Wideband, Low Phase Noise Receivers
- Windows NT[®] Graphical User Interface (GUI)
- AM, FM, LOG, Baseband, and Audio Outputs

DESCRIPTION

SPECTRE is a portable emitter collection system that can be custom configured for specific mission requirements. The SPECTRE (Special Purpose Emitter Collection & Tactical Receiving Equipment) system is composed of three major subsystems: signal acquisition, signal collection, and command and control. In addition, the platform provides flexible interfaces to existing ESM and COMINT collection systems or the capability to integrate additional analysis tools into the SPECTRE platform.

As shown in Figure 2, SPECTRE Block Diagram, the signal acquisition subsystem is comprised of SMR-3822 Microwave Receivers and FE-3520 Frequency Extenders. The SMR-3822 is a wideband swept receiver with a tuning range of 0.5 to 18 GHz. The FE-3520 extends the SMR-3822 tuning range to cover 18 to 40 GHz in two bands (18 to 26.5 GHz

SPECTRE

and 26.5 to 40 GHz). Signal acquisition is enhanced by the ultra-fast tuning speed of the SMR-3822 and availability of custom sweep and display set-ups including: Sector Scan, Step Scan, Auto-detect and up to six separate display segments with adjustable ranges and limits. Within the signal acquisition dis-

software, or GUI (Graphical User Interface), is used to configure and control the SPECTRE System. It provides the following:

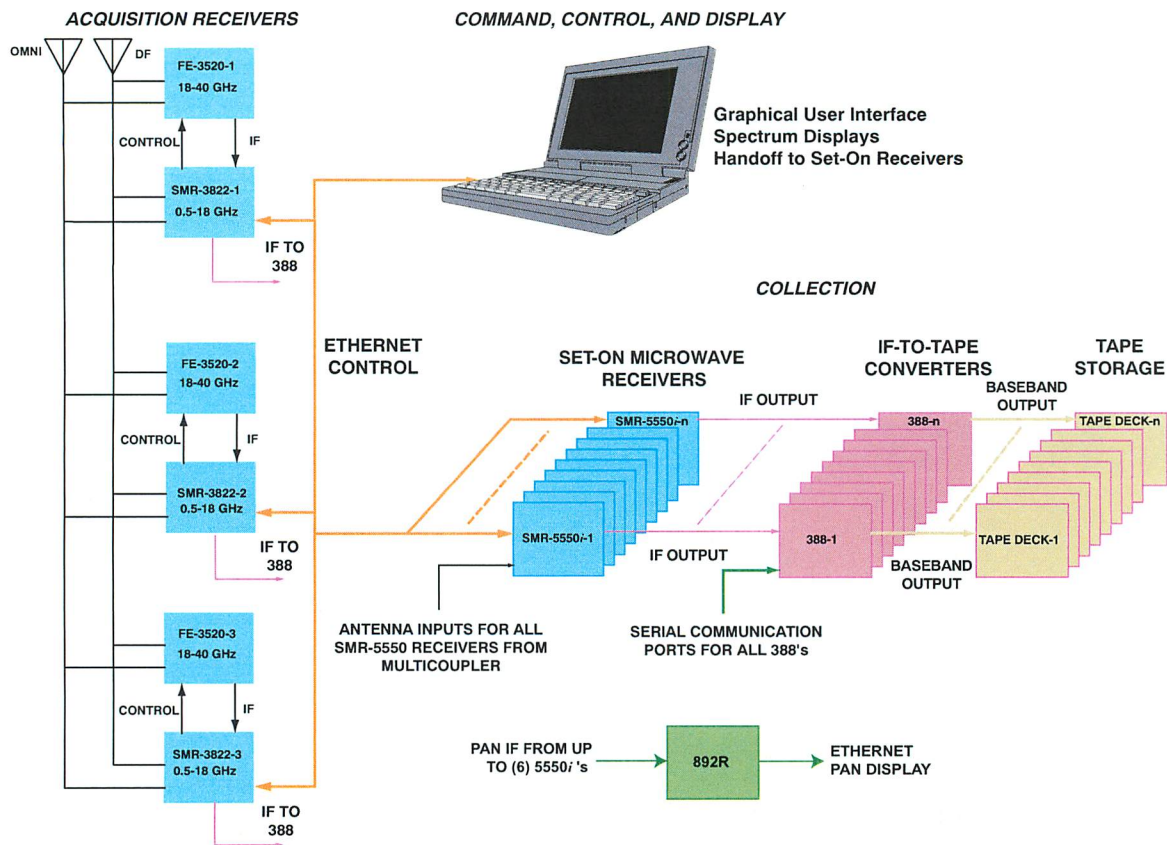


Figure 2 SPECTRE Block Diagram

play area, signals can be handed off manually to the set-on receivers for analysis and recording or automatically detected with the multimode autostop function.

The signal collection subsystem shown in the block diagram is composed of SMR-5550i Microwave Receivers used as set-on and analysis receivers, Model 388 IF-to-Baseband Converters, the Model 892R IF Pan Display Processor and analog or digital recorders. Signal measurements are performed on screen in either the frequency domain using the Pan IF Display or in the time domain by enabling the zero span mode. Specific emitter parameters can be measured and stored for future use.

The command, control, and display subsystem is designed to operate on a PC or laptop using the Windows NT® operating system. This software can also be run on a PC compatible desktop for more permanent installations. The command and control

- RF Spectrum and IF Pan Displays
- Signal Analysis Functions
- Signal Handoff from Acquisition Receivers to Set-On Receivers
- Individual Receiver Control
- System Configuration.

The screen in Figure 4 shows the System Manager window that provides access to setup information for the equipment configured in the system and receiver windows (RF sweep display and IF Pan display).

Figure 3 depicts a typical RF sweep display from the SPECTRE GUI software showing an RF sweep from 0.5 to 18 GHz. The region on the spectrum display highlighted in purple is the zoom area which allows the operator to select a region of interest for closer examination. The red line in the center of the zoom region is one of several measurement cursors. The operator enables the markers by pointing to the

SPECTRE

signal with the mouse and clicking to actuate and move the marker. The markers can also be dragged, using the mouse, to any position on the sweep display. Below the spectrum display is the Receiver Control area. The operator can access and modify any of the receiver functions on-screen.

Receivers is possible by adding a CP-3801 Receiver Controller to each SMR-3822. The SMR-5550i Microwave Receivers, used as set-on frequency receivers, may be locally controlled from the front panel of each receiver.

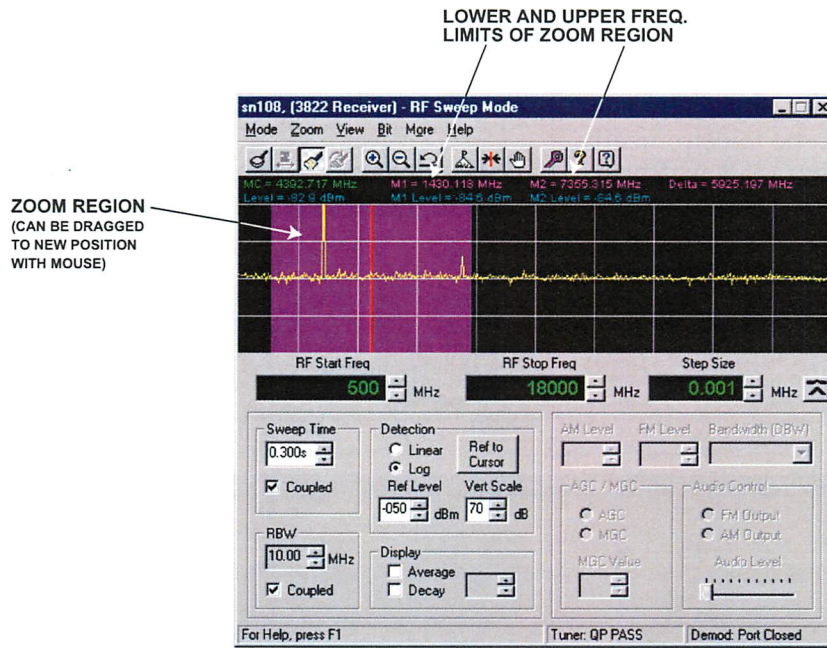


Figure 3 RF Sweep Screen

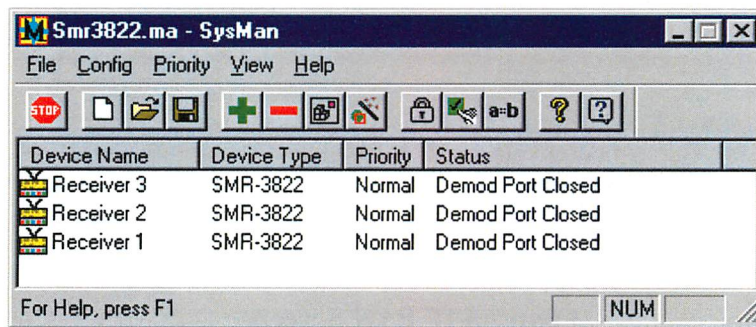


Figure 4 System Manager Window

When the SMR-3822 receiver is tuned to a fixed frequency, the IF PAN screen, shown in Figure 5, is used to examine the signal. Click-tune, zoom, and measurement markers are also available in this mode. The Receiver Control area below the spectrum display is used to set receiver operating parameters that are unique to the CW operating mode.

The laptop or desktop is connected to the system through an Ethernet 10 base-2 LAN interface. Local control of individual SMR-3822 Microwave

The Model 388 IF-to-Baseband Converters accept either the 70 MHz or 160 MHz IF output of the SMR-5550i. Additionally, 140 MHz IF and AM and FM video outputs are available from the SMR-5550i for use with customer provided peripheral equipment not shown in the SPECTRE block diagram.

Figure 1 is a photograph of a typical SPECTRE System. This configuration has the following components:

SPECTRE

- 1 – SMR-3822 Microwave Receiver with CP-3801 Receiver Controller
- 1 – FE-3520 Frequency Extender
- 3 – SMR-5550i Microwave Receivers
- 4 – Model 388 IF-to-Baseband Converters
- 1 – Laptop PC compatible.

A separate portable rack system (not shown here) contains the tape decks.

A SPECTRE System that is already physically configured and in the field, could be electronically reconfigured, on site, using the GUI software. Adding or removing devices from an existing sys-

tem is accomplished easily using the GUI software to electronically reconfigure the system to its new physical layout. The TCP/IP protocol allows the SPECTRE System to be controlled remotely over a LAN or Internet connection.

SPECTRE's versatility permits the user to custom design a system, from off-the-shelf components, that is sized according to mission requirements. The system shown in the SPECTRE block diagram is only one of many possible configurations.

Detailed data sheets are available for the devices used in the SPECTRE System.

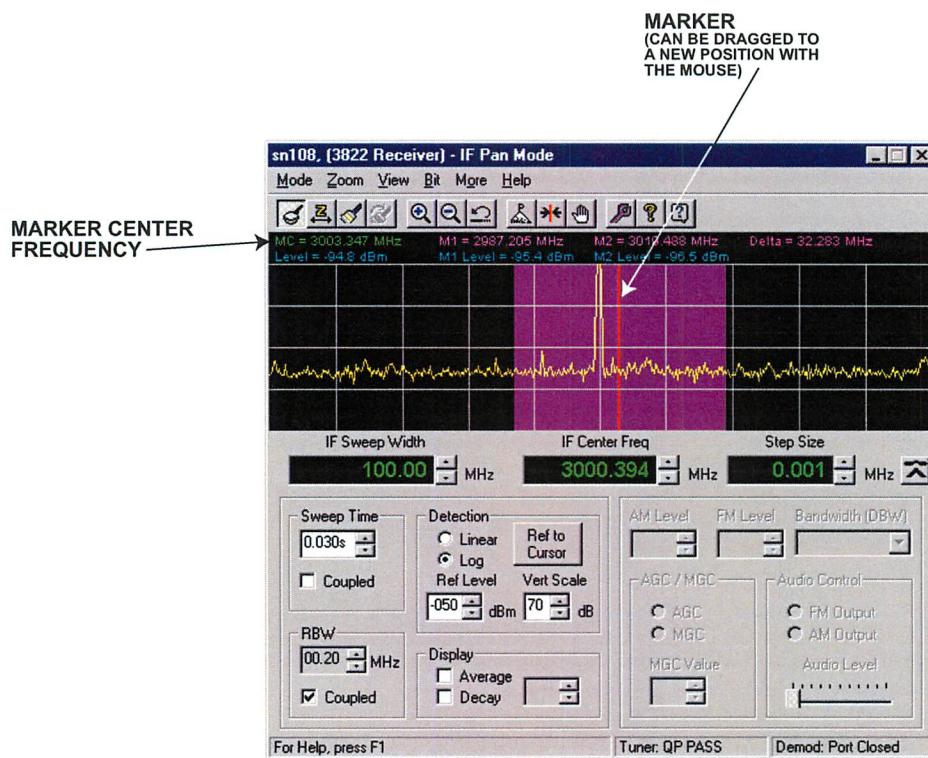


Figure 5 IF PAN Screen



M/A-COM SIGINT PRODUCTS
10713 Gilroy Road, P.O. Box 868
Hunt Valley, MD 21030 U.S.A.
Phone 410-329-7900
FAX 410-329-7990
e-mail: sigintsales@tycoelectronics.com
www.macom.com/sigint

tyco / Electronics

DWFE