



THE TSA SPECTRUM
MONITOR
For Use with Mk Vb Scanlock

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SPECTRUM MONITOR SM-1

Operating Manual

Introduction

The TSA Signal Monitor (Spectrum Monitor Model SM-1) is designed to allow the operator to visually examine the characteristics of signals acquired with the Scanlock radio receivers (Mark V B models).

In operation, the SM-1 tunes itself rapidly back and forth across the 2 MHz IF signal from the Scanlock. As it tunes, the sweeping dot on the cathode ray tube is deflected upward from its base line by an amount proportional to the strength of the signal present at that specific frequency. This, in effect, separates the overall signal including its modulation components into parts that can be visually examined even though they may not be audible using standard demodulation techniques.

The SM-1 can display signal energy up to 250 kHz on either side of the frequency to which the SCANLOCK is tuned. When a signal of interest is acquired, that signal can be expanded on the screen so that individual parts of it can be examined in more detail. A marker is provided to allow the operator to check that the sweep is centered on the screen of the CRT.

The SM-1 is connected to the SCANLOCK with a small patch cord and operates from its internal battery pack. The battery pack provides at least 12 hours of operation when fully charged. Charging is done using a small external charger (supplied) that connects to any 110 volt a.c. mains outlet.

Function of Controls

SWEEP WIDTH

Adjusts the amount of the spectrum around the center frequency to be displayed. When set at the maximum clockwise position, approximately 500 kHz of the spectrum is displayed. As it is turned in the counter-clockwise direction the amount of spectrum coverage is reduced and the signal displayed appears to widen.

CENTER FREQ

Used to move the signal horizontally across the screen. When the MARKER button is pushed in, a marker signal will appear on the screen. This can be moved to the center of the screen using the CENTER FREQ control. The marker signal corresponds to the center of

	the frequency to which the SCANLOCK is tuned.
SIGNAL GAIN	Used to adjust the amount of vertical deflection of the signal on the screen.
MARKER	See the comments in CENTER FREQ above.
POWER	Used to turn the SM-1 on and off.
CHARGING	Indicates that power is being received by the unit and that the battery is being charged.
INTEN (rear panel)	Used to adjust the brightness of the trace on the screen.
FOCUS (rear panel)	Used to adjust the sharpness and clarity of the image.

Operating Procedures

Connect the small black patch cord (provided with the SCANLOCK receiver) to the connector labelled RF IN on the rear panel of the SM-1. Connect the other end of the cord to the SCANLOCK connector labelled IF OUT 2 MHZ.

Turn on the SM-1 by moving the POWER switch up. A green horizontal line should appear near the bottom of the screen. Turn on the SCANLOCK and a pattern should appear on the screen as parts of the line are deflected upward.

Turn the SWEEP WIDTH control maximum clockwise to see as much of the spectrum as possible and adjust the SIGNAL GAIN control so that just a bit of background noise (appears as 'grass' along the base line of the trace) is apparent.

As the SCANLOCK is tuned (or it tunes itself), signals will pass in both directions across the screen. They will usually be audible through the SCANLOCK as they near the center of the screen.

Some signals that are apparent on the screen of the SM-1 will not be audible on the SM-1 and that is because they are substantially weaker than a nearby (in frequency) stronger signal that has captured the 'attention' of the SCANLOCK. These signals can be examined to see if they are from an eavesdropping source by expanding the sweep width until all parts of the signal are clearly visible and then making sounds in the room and looking for a change in the characteristics of the signal on the screen. Depressing the S/W button on the SCANLOCK is an easy way of doing that.

Practice with the SM-1 will give the operator skill in identifying the characteristics of the various types of signals that will appear on the screen. A more detailed description of signal characteristics as seen on the SM-1 can be obtained separately by special order from TSA, Inc.

The internal battery is charged by plugging the cord from the charger into the small jack labelled CHARGER on the rear panel. Then the charger should be plugged into a 110 volt wall outlet. Charging is accomplished in 14 hours when the battery pack is completely exhausted. The charger may then be left connected indefinitely to automatically maintain the state of charge until the unit is to be used.