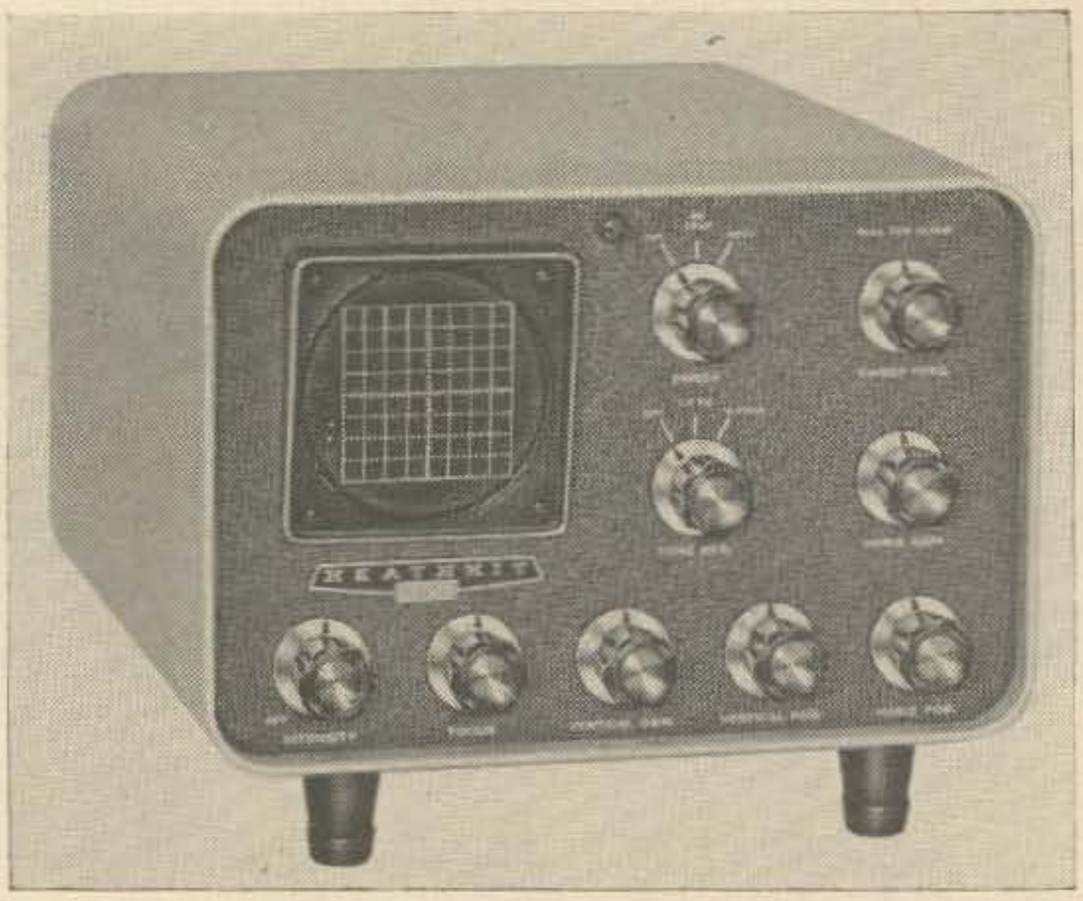

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Heathkit SB-610 Monitor Scope

Are you interested in what your transmitted signal really sounds like at the other end? Is your new linear amplifier really linear or is it generating a raucous racket that is interfering with other stations on the band? And if it is nonlinear, what is the cause, improper grid bias, incorrect loading, regeneration or parasitics? Well, there is no *one* magic black box that will give you all these answers, but the correct interpretation of the patterns produced by the Heathkit SB-610 Monitor Scope come very close to it.

The SB-610 has proven to be extremely valuable around my shack and its versatility appears to be limited only by the ingenuity of the user. The engineers at Heath planned way ahead when they had this little jewel on the drawing board. Besides monitoring the behavior of your favorite linear, it will give you some insight to almost any type of transmitted signal, be it AM, CW, RTTY, or SSB. You can also check the other fellow's signal by connecting the Monitor Scope to your station receiver. Additional parts are included in the kit so that the vertical amplifier section of the scope may be tailor made to fit your own particular requirements.

For monitoring RTTY signals and with receiver *ifs* up to 150 kHz, the vertical amplifier is an untuned arrangement with a resistor as the plate load. For *ifs* of 455 kHz and above, the necessary *if* transformers and tuning capacitors are included in the kit. By changing these components, the Monitor Scope may be used with just about any *if* from 455 kHz up to 6 MHz.

In addition to monitoring duties, when the vertical amplifier is wired for use to 150 kHz, the Monitor Scope may be used as a conventional oscilloscope. Its vertical sensitivity is somewhat limited in this applicaton, but for many purposes it is perfectly suitable. Here again the design engineers have come through with flying colors, providing much of the circuitry found in many bench-type oscilloscopes, including adjustable sweep and synchronization.

The Monitor Scope is easy to build and a snap to use. With the excellent guidance pro-

SB-610 Specifications

Vertical Amplifier
Input resistance: 100 kilohms
Sensitivity (for 1 inch deflection):
Untuned: RTTY, 1 volt nominal
20 kHz–455 kHz, less than 500 mv
Tuned: 455 kHz, 70 mv nominal
1600-2500 kHz, less than 200 mv
3000-3400 khz, less than 500 mv
5000-6000 kHz, less than 700 mv

Horizontal Amplifier
Input resistance: 1 megohm
Sensitivity (for 1 inch deflection): 800 mv
Frequency response: ± 3 dB from 3 Hz to 15 kHz
Tone Oscillators
Frequencies: Approximately 1500 and 1950 Hz
Output voltage: 50 mv

Miscellaneous
Frequency coverages: 1.8 MHz through 54 MHz, 50-75 ohm coaxial input
Signal power limits: 15 watts to 1 kilowatt
Power requirements: 120 Vac 50/60 Hz, 35 watts
Dimensions: 6 H x 10 W x 11⅛ D.
Price: $69.95

vided in the instruction manual, even the inveterate novice can make some pretty sound deductions about signal quality. The manual is liberally illustrated with typical scope patterns; each is discussed in detail and if it is indicative of poor signal quality, some of the probable causes are listed. For monitoring with the station receiver, a series of patterns in the manual show the effect of receiver bandpass and avc action on the received signal. These should be considered when making on the air checks.

Although designed for use on the ham frequencies from 1.8 MHz to 54 MHz, excellent results may be obtained up to 100 MHz. The Monitor Scope can be used on two meters, but there may be some distortion of the pattern. The unit will safely take a full kilowatt and will operate properly down to about 15 watts. A step attenuator on the rear panel provides up to 24 dB attenuation when adjusting the scope with a particular transmitter or linear amplifier.

For testing single sideband transmitters, a two tone test generator is built in. The frequencies of this generator, approximately 1500 kHz and 1950 kHz, have been chosen so that their second harmonics fall outside the normal audio passband of modern ssb transmitters. It is the attention to small details such as these that really make the difference when making qualitative measurements.

One of the problems with many monitoring scopes is that during receive periods the scope trace remains stationary in the center of the CRT. If the trace is not turned off to one side of the face of the CRT it will eventually burn a hole in the phosphorus. In the Monitor Scope however, the Heath engineers have come up with a neat solution to this problem. In their circuit a *clamp* tube is used to move the trace over to one side of the CRT. This clamp tube may be controlled manually, or automatically when the scope is operated in either the RTTY or RF Trapezoid mode. In the automatic position, a sample of the transmitter rf power is rectified and used to turn the clamp tube off, thereby restoring the trace to the center of the CRT. Usually about 100 watts is necessary to provide enough rf for this purpose; for lower input power levels it is necessary to use the manual mode.

For monitoring or checking any type of amateur transmitter, it is hard to beat the SB-610 in performance and cost. Whether it is used at the bench in testing equipment or in your shack for on the air checks, you will find it to be a very useful and worthwhile addition to your station. . . . W1DTY