

THE HEATHKIT HO-13 HAMSCAN

ONE WAY TO WATCH YOUR RADIO

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During the 1960's, Heathkit was heavily involved in supplying products to the radio amateur. The HO-13 Ham-Scan was one of their efforts. This device is a panoramic display, allowing the observation of received signals on a cathode ray tube. Its operation is similar to that of an oscilloscope.

Heath also produced a companion unit, the HO-10. It was used to observe transmitted signals. Both models were subsequently replaced by upgraded units, the SB-620 and SB-610 respectively. Heathkit does not currently offer such a device.

The Ham-Scan unit is enclosed in a metal case measuring $7\frac{1}{2}$ " wide, $5\frac{1}{2}$ " high, and $9\frac{1}{2}$ " deep. The unit weighs eight pounds. The HO-13 was sold in kit form. The kit made use of a plated, metal chassis. It is an all-tube device, employing seven vacuum tubes and a three inch diameter cathode ray tube. Circuit components are wired point-to-point between tube sockets and terminal strips.

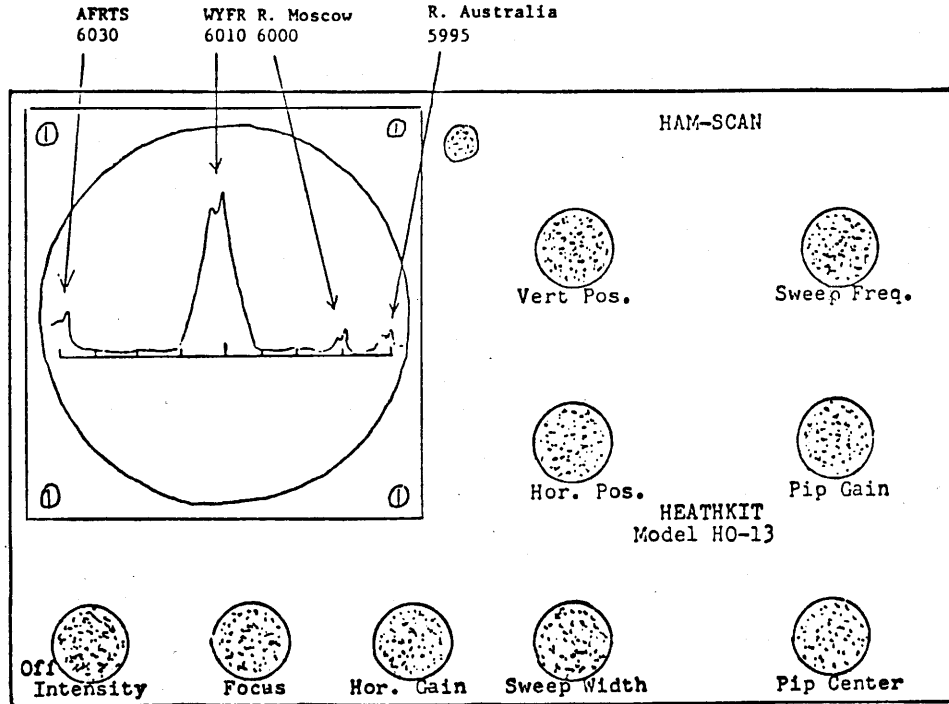
The HO-13 is used to observe radio signals within a set range of frequencies. The accompanying diagram shows the front panel controls. The sweep width control determines the width of the spectrum that is to be viewed. At minimum width, it "sees" about five KHz. At this setting, however, one signal can occupy the entire display. Setting the control to maximum width permits a view of 60 to 70 KHz. At maximum width, up to seven broadcast band or 10-12 high frequency signals can be seen. The signal display may be moved up, down, to the left, and to the right by employing the vertical and horizontal position controls. Display brightness and focus are also adjustable. While the horizontal position control acts as a coarse adjustment, the pip center allows the operator to precisely center the displayed signal. I have set the horizontal gain and sweep frequency controls for the best-appearing display. No further adjustment is required. Mounted concentrically with the sweep width control, is a switch that allows the introduction of an avc circuit. This circuit functions like your receiver avc. Its use smooths out the rapid up and down movement of the displayed signal which is influenced by signal propagation.

The cathode ray tube displays a signal as a bell-shaped tracing, similar to plottings of receiver i.f. filter responses. The size of the display is proportional to signal strength. Both sidebands, if transmitted, and the signal carrier are shown. The diagram page depicts several typical display tracings.

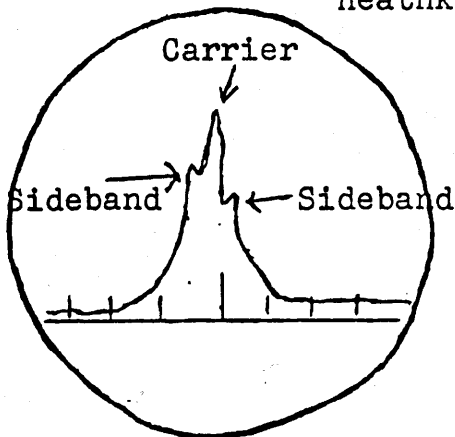
How can the amateur or radio listener make use of the Ham-Scan to increase enjoyment of the hobby? The amateur can observe incoming signals to see if certain signals are too broad, and a source of splatter. A search of nearby frequencies for unoccu-

Typical HAM-SCAN
Display
Saturday, 1315 UTC

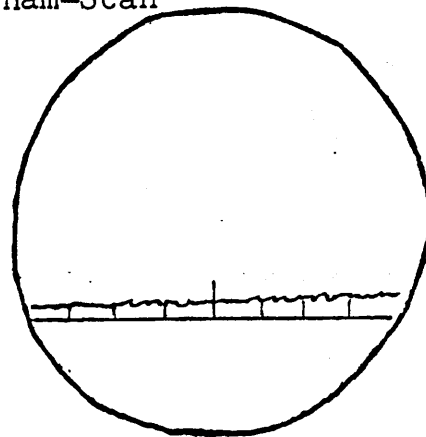
Front Panel Controls



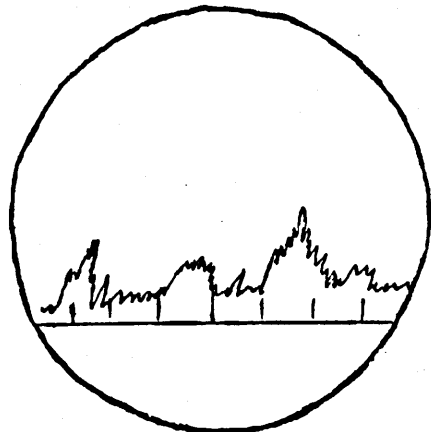
Heathkit HO-13 Ham-Scan



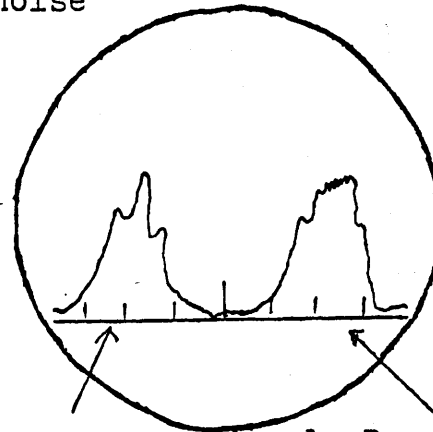
Strong signal-WWV 15 MHz



No signal-ripples show atmospheric noise



No signal-static from storms

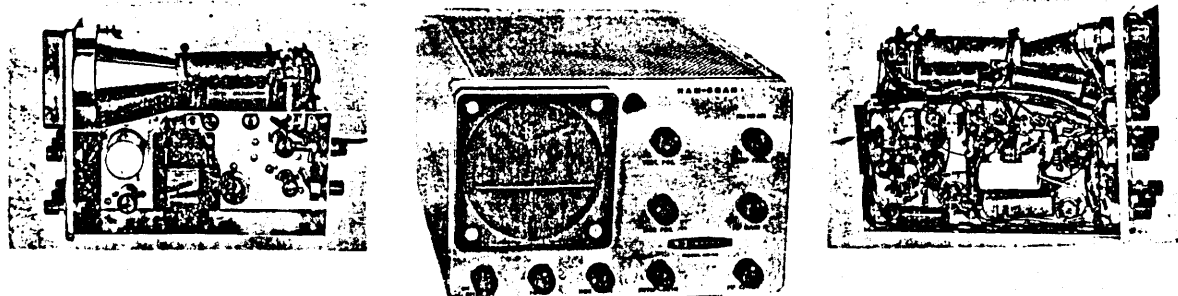


Clean, strong signal Raspy CW

pied spectrum can help in conducting interference-free conversation. I use the HO-13 for two reasons: 1] To search for signals in the tropical bands. The Ham-Scan will indicate the existence of signals too weak to produce audio. If the identity of the signal is unknown, one can wait to see if audio develops; 2] To check for "split frequency" signals on the broadcast band. I have observed signals on 535, 555, 655, 705, 765, 774, 834, 895, 1035, 1134, 1165, and 1179 KHz, when little or no audio was present.

The HO-13 Ham-Scan is connected to a receiver at a point immediately following the mixer stage and preceding the first i.f. circuitry. Heath designed this device to accommodate first i.f. frequencies between 455 and 3340 KHz. At the point of connection, the signal has not been influenced by i.f. filters or the avc circuit. I.F. frequencies in the range described were commonly employed in receivers of tube-type design, and Heath products at 3340 KHz. By replacing several resistors and capacitors, and retuning an adjustable inductor, the Ham-Scan could be set to function with receivers of various manufacture. Due to design limitations, the Ham-Scan will not work with recent up-converting receivers that employ i.f. frequencies in the 35 to 72 MHz range. A construction article on page 43 of the September, 1973 QST Magazine, describes an i.f. converter. This circuit converts high i.f. frequencies to 455 KHz, which is compatible with the HO-13. The article claims that the converter can be made to work at any i.f. frequency, simply by changing the converter local oscillator frequency. The experienced experimenter might want to give the circuit a try.

Finding a used HO-13 Ham-Scan in any condition takes time. Persistence in checking the usual sources of radio equipment will likely turn one up. The price for this device seems to be in the range of \$40 to \$50. The HO-13 can add a little spice to radio listening and also provide a few more knobs to twiddle. The Ham-Scan was reviewed in the September, 1965 issue of CQ Magazine. The Heathkit HO-10 Monitorscope was covered in the June, 1964 CQ, page 37.



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