The receiver's input sensitivity was more than adequate for use with any half decent HF antenna, and no problems were experienced with intermod products on any band. If anything, some reduction in the RF gain control seemed useful on the lower bands.

One of the few problems on the performance side was with the audio reproduction. The AGC time constants seemed a little out, with too fast a decay time on both the fast and slow modes, certainly too fast a decay for SSB use. This meant that the AGC circuit was continuously having to start from scratch, with continual pumping of the background noise — it also seemed that the attack time was a little slow. The recovered audio was noticeably distorted at the start of speech, each time the circuit charged up. The effect was of course more apparent on stronger signals.

Selectivity without the optional filters was perfectly adequate, and sensible use of the shift and width functions made elimination of adjacent channel QRM really easy. The selectivity could be screwed right up if needed, and the rejection on the skirts didn't seem to suffer very much in the process. It was possible to reduce the bandwidth to effectively zero with no signals audible at all (useful on some 80 metre nets!).

Ergonomics

The front panel is well laid out, except for the MOX switch (manual TX/RX), which is immediately below the POWER on/off switch. Several times I switched the rig on, and unknowingly put it into TX mode at the same time. At one stage, the rig was sitting on transmit for 3 hours before I noticed, but no harm seemed to have resulted as no carrier was being radiated. If there had been carrier present, and the ATU on a band other than that selected, I doubt the PA would have survived.

Reverting to performance, the audio quality from the internal speaker was a little on the bassy side, without much character. The tone control was mainly used in the full treble boost position in an effort to overcome this.

Talking of audio quality, the rig cam with two microphones — the hand mic type MH-1B8, and a desk mic type MD-1. The hand mic was by far the better performer, and was preferred by virtually every station worked. The desk mic was 'orrible and didn't get one favourable report — the 3 switched tone settings on the base didn't appear to make much difference either. One Stateside station described it as stuffed with cotton wool, and our Editor didn't make any more favourable noises about it.

As with the *TS-930S*, it is necessary to keep the ALC meter reading well up when on SSB, if you want maximum undistorted talk-power. If you want less power on SSB, you have a problem.

Although the drive power can be varied on CW, there is no provision for varying the SSB drive, or so the book says. The DRIVE control does in fact have some effect on SSB, but it is all cramped down at the low end of its travel, and not really of much use. The other way to get the power down is to reduce the mic gain, but this does have the disadvantage of making the residual carrier suppression that much worse by comparison with the speech signal itself.

Break-in operation on CW was no problem, but speeds above 30 WPM would not be possible as the changeover circuit isn't fast enough on the review sample. The Keyer was of course very good, being built around the Curtis 8044 keyer chip.

One transmit facility which wasn't mentioned earlier is the AMGC (Automatic Mic Gain Control). This establishes a relative threshold level at the microphone audio input, below which audio will not provide any output. This proved very useful, as it prevented the cooling fan from modulating when not speaking into the microphone!

The noise blanker fitted to the

AGC threshold was found.

Transmit Mode

7) The equipment was set to USB and a 2-tone audio generator connected to the microphone input. The PEP output and 3rd and 5th order IPs were recorded.

Frequency	PEP Output	3rd Order	5th Order
1.9 MHz	116W	26dB below tones	42dB below tones
3.7 MHz	116W	27dB below tones	45dB below tones
7.05 MHz	110W	28dB below tones	43dB below tones
14.2 MHz	118W	28dB below tones	42dB below tones
21.2 MHz	128W	27dB below tones	40dB below tones
28.5 MHz	117W	24dB below tones	35dB below tones

8) As for 7, but the input level at each point was backed off to give half power output. The single tone output on full power was measured.

Frequency	PEP Output	3rd Order	5th Order	Single Tone
1.9 MHz	58W	29dB below tones	43dB below tones	109W
3.7 MHz	58W	32dB below tones	48dB below tones	109W
7.05 MHz	55W	35dB below tones	48dB below tones	105W
14.2 MHz	59W	35dB below tones	42dB below tones	111W
21.2 MHz	64W	35dB below tones	43dB below tones	123W
28.5 MHz	58W	30dB below tones	40dB below tones	113W

9) The harmonics were measured at maximum single tone output. (figures are dB below the single tone.)

Frequency	2nd harmonic	3rd harmonic
1.9 MHz	70+	70
3.7 MHz	70+	70
7.05 MHz	66	65
14.2 MHz	70+	65
21.2 MHz	70+	70+
28.5 MHz	70+	70+

Our thanks to SMC Ltd. who kindly loaned the review rig and microphones to us.