

Full output for the SB-110A on SSB.

By K0CQ

Many a SB-110A has been cursed with low output on SSB though full output on CW. The full output on CW hints that the PA tubes are good, but still there was never any ALC action on SSB no matter how high the microphone gain. Checking with my scope showed 20 watts PEP on SSB and 100 on CW.

CW drives the transmitter IF stages directly from the carrier oscillator/BFO, while SSB goes through a diode ring balanced modulator. The balanced modulator seemed starved for carrier. Checking further I found the BFO/carrier oscillator level being clipped by the diode ring product detector. When I unhooked the receiver's product detector I had more than ample SSB output. I experimented with various values of resistor in the BFO wire to the product detector and settled on 1500 ohms. The receiver works fine, and now the noise limiter has some effect it didn't have before. But the main good effect is that the transmitter has normal ALC action and puts out 100 watts PEP on SSB.

Looking at the schematic today, I see that the two diode rings are practically identical, but the receiver product detector is hooked to the BFO/carrier oscillator with a 10 nf capacitor while the balanced modulator is hooked to the same point with a 50 pf capacitor. So the product detector is coupled tightly, while the balanced modulator is hooked through a reactance of about 1000 ohms at 3.395 MHz. I have not tried it (can't, I sold the SB-110 last month) but it looks to me as if changing the 10 nf to 50 pf may work equally fine.

I posted this to the internet years ago but it seems to have disappeared in recent times.

