

The Comtran C-II Audio Compression Amplifier

THE Comtran C-II is an audio compression amplifier which makes it possible to raise the average modulated power of a transmitter without overmodulating it, thereby providing an added degree of signal punch together with an effective increase in voice intelligibility. The unit is a small and compact transistorized device powered by a self-contained inexpensive 9-volt transistor radio battery. Installation simply requires that it be connected between the microphone and the mic input of the transmitter.

Circuitry

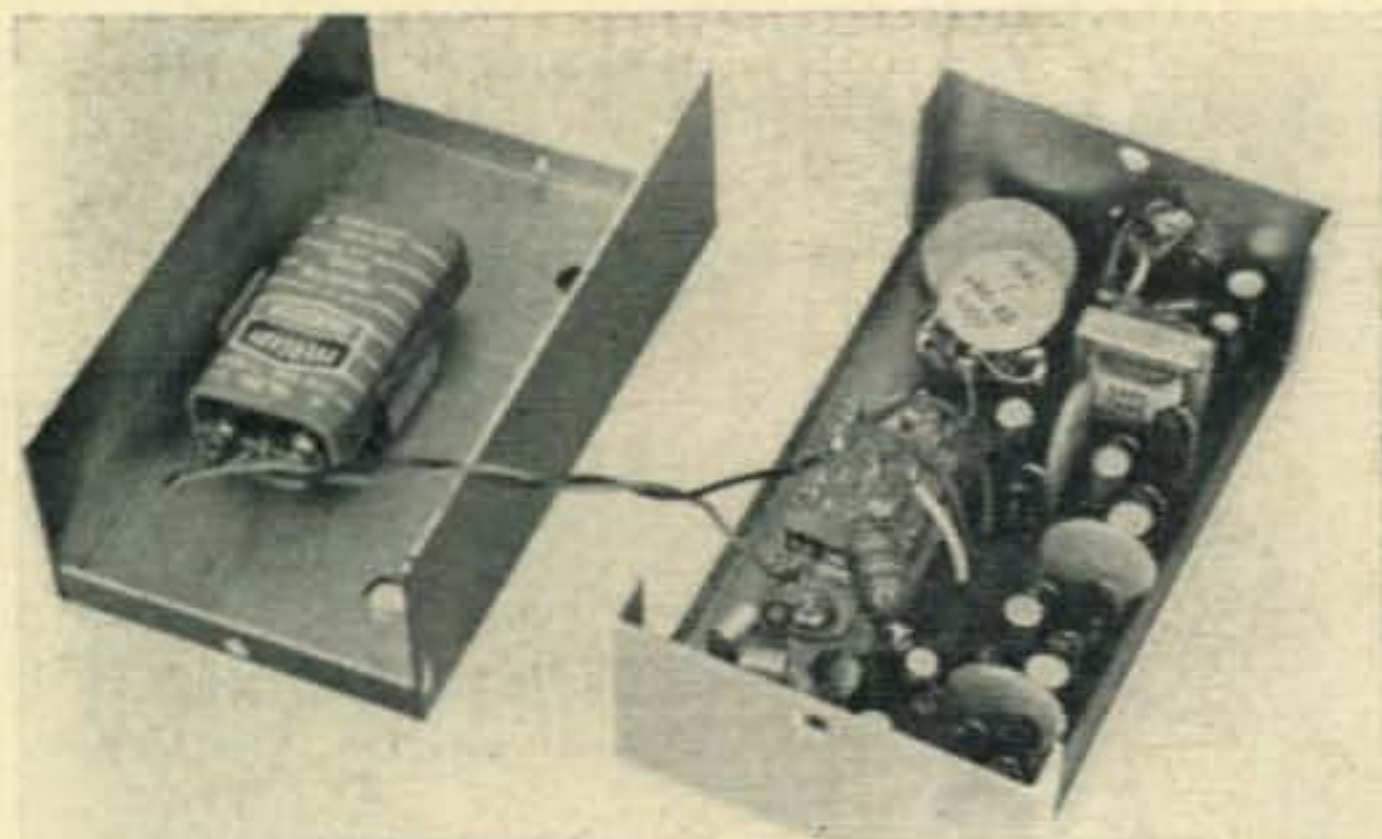
No circuit diagram was supplied with the unit tested for evaluation; however, it is a three-stage affair which rectifies audio from the output stage and feeds it back as d.c. bias for controlling the gain of preceding stages. Thus the output level may be held constant for a given output potential with a wide range of input levels. This not only prevents overmodulation, but also maintains uniform output for many voice levels. It also keeps the average power high at all times and makes the working distance from the microphone less critical.

Other devices which can accomplish similar results employ a clipper, but the inherent distortion of such an arrangement usually is considerably higher than that of a compression amplifier.

Filtering is included which rolls off the frequency response above 3,000 cycles to limit bandwidth and possible distortion which may result in splatter beyond 3 kc from the transmitter frequency.

Installation and Operation

The Comtran C-II output cable is provided with a standard shielded three-way microphone plug which is inserted into the mic jack of the transmitter. The mic input of the unit has a standard three-way mic jack. Normal push-to-



Interior view of the Model C-II. The three transistor stages are mounted on a small printed-circuit board at the right. The other round-ended objects are tiny electrolytic capacitors. A 9-volt transistor-radio battery is held in the cover at the left.



The Comtran Model C-II Compression Amplifier is a neat and small self-powered unit. Mic jack is at the left with the output gain control at the right. The LOCAL-DISTANT switch at the center cuts the amplifier in or out of the microphone circuit. The output cable with plug is for insertion into the mic jack of the transmitter.

talk operation is not altered. Instructions are furnished for modifying the connections for use with other type mic plugs and jacks.

The size of the unit is only $4\frac{1}{4}'' \times 2\frac{1}{2}'' \times 1\frac{1}{2}''$ and it is provided with two key-hole slots for conveniently mounting it on the rear of a transmitter.

A slide switch on the front of the compression amplifier enables it to be cut in or out of the circuit. With the switch in the LOCAL position, the mic input bypasses the amplifier and is fed directly to the output cable. When the switch is in the DISTANCE position, the compressor is inserted between the microphone and the output cable. At the same time, battery power is applied to the transistors and the compressor is instantly ready for use.

A GAIN control sets the output to the level required for complete modulation of the transmitter. Once this control is set, the modulation will be maintained at the maximum level over a wide variation of voice-level inputs without exceeding the preset degree of modulation. No control is provided for adjusting the degree of compression.

Performance

On-the-air tests, using a.m. and s.s.b., indicated that the C-II Compression Amplifier very effectively produces more solid talk power with improved intelligibility, especially when used during adverse band conditions. It is particularly helpful for mobile work where power is generally limited.

A noticeable attenuation of the low-frequency response also contributes greatly toward this end and some naturalness of the voice is lost, but this is of little consequence considering the other benefits derived.¹

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¹Scherer, W. M., "Factors in Choosing a Microphone," CQ, Jan. 1963, p. 42.



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Comtran [from page 38]

Listening tests indicated no bothersome distortion; in fact, measurements made at normal voice levels indicated 4% distortion at 400 c.p.s., 1.4% at 1,000 c.p.s. and 0.85% at 2,000 c.p.s. The output level holds closely to within 2 db for a considerable range of input levels; however, the initial impulse of a train of sounds overshoots by about 6 db before the compressor takes hold, an effect often experienced with a.l.c. systems also.

Observations on an r.f. wattmeter and an oscilloscope showed that when the C-II was used, the average talk power increased between 50 and 75 percent for a given degree of peak modulation.

The Comtran C-II Compression Amplifier sells for \$29.95 and is produced by Comtran Associates, Inc., 2847 Cropsey Ave., Brooklyn 14, N.Y.—W2AEF

Propagation [from page 61]

many openings. Eighty meters is expected to be the optimum band for DX conditions during the hours of darkness of the fall, winter and spring months. A considerable improvement is also expected on 160 meters. This improvement has already been observed and W1BB reports that between September and November of this past year he managed to work such exotic DX on 160 meters as 5N2JKO, K1KSH/KG6, ZS2FM, VE2UQ/VE8 and dozens of Europeans. It is very possible that propagation conditions on 160 meters during the hours of darkness may be better during the new year than they have ever been before!

If the radio amateur propagation research of the Monroes proves anything, then a continued increase in Sporadic-E short-skip openings can be expected during 1964, especially between late May and early September. Fewer auroral-type openings, however, are expected to occur during the new year, since the sun is going through a quiet period as solar activity continues to decrease.

Shortwave propagation conditions during the coming year, therefore, are expected to be somewhat poorer on 10, 15 and 20 meters, but improved on 40, 80 and 160 meters. Fewer auroral-type ionospheric openings are expected, but record-breaking Sporadic-E propagation may take place during the late spring and summer months.

1964 will also be "The International Quiet Sun Year."² The IQSY is a follow-up to the International Geophysical Year. The IGY, one of the most successful research programs ever carried out, took place during 1957-58 to coincide with peak solar activity. The IQSY has been planned to coincide with minimum solar activity, which is expected to occur sometime between late 1964 and mid-1965. This new world-wide project, in

²Hearsum, D.R., W8LVZ, "IQSY—The International Quiet Sun Year", p. 39 Sept. 1963, CQ.