BTR-300 OPERATIONAL DESCRIPTION

1. Compressor
   U502C is a linear compressor which is used to improve the system signal to noise ratio. A complementary expander is placed at the receiving end.

2. Pre-emphasis
   U502B is the pre-emphasis amplifier. The value of 115us is set by C510, R505 and R506.

3. Modulation limiter
   When the level at TP501 exceeds a preset value, Q501 conducts and raises the voltage across C506 which lowers the gain of U502C and holds the level constant. VR501 sets the deviation.

4. Gerber modulator
   The left half of U503 is configured as a Colpitts oscillator with a Gerber modulator. D502 through D505 inclusive provide temperature compensation. L510 is used to set the crystal on frequency.

5. VCO
   Q502 and associated components form a voltage controlled oscillator which operates at the carrier frequency.

6. Divider and mixer
   U504 is a divide by eight which feeds the other half of U503 which is a mixer. When Q502 is running at exactly eight times the crystal then the zero beat signal from U503 is used to maintain this lock condition.

7. Buffer and output stages
   Q503 and Q506 are buffer stages. Q505 is used on power up to keep Q506 off until the loop locks. Q507 is the output stage. Matching and low pass filtering are provided by C543, C544, C545, C546, L507, L508 and L509.