

GENEX INCORPORATION

ALIGNMENT / ADJUSTMENTS

GENERAL

For proper alignment, the unit should be programmed with the following channel and frequency information

CH. NO	RECEIVED FREQ.(MHz)	TRANSMIT FREQ.(MHz)	CHANNEL SPACING(KHz)
CH1	450.0125	450.0125	25
CH2	460.0000	460.0000	25
CH3	469.9875	469.9875	25

Make connections to the Unit per Figure 1 (Equipment Test Set-up) below

For the location of the components called out in these procedures, refer to RF Board and SUB Board

B. VCO CONTROL VOLTAGE / FREQUENCY ADJUSTMENT

- VCO CHECK.

NOTE : VCO check must be accomplished before proceeding with the Transmitter and or Receive Alignment.

1. Connect the voltmeter to TP
2. Place the Unit on channel select.
3. Tune VC1 in Receive mode for 2.0V \pm 0.05 at TP
4. Push the PTTswitch (TX) and tune VC2 for 2.0V \pm 0.05V at TP

- FREQUENCY ADJUSTMENT

1. Connect the E.U. T in accordance with Figure 1.
2. Place the Unit on channel select.
3. Operate the transmitter and adjust VR3 for a Frequency Counter reading within \pm 50Hz of the programmed transmit frequency.

C. MODULATION ADJUSTMENT

1. Connect the E.U.T in accordance with Figure 1.
2. Place the E.U.T on channel select.
 - Apply a 9600 Baud SQ. wave signal to the E.U.T.
 - Set the SQ.wave generator's output level at approximate 5Vrms.
 - Operate the transmitter and adjust VR2 and VR4(MOD ADJ) for \pm 5.0KHz deviation.
3. Place the E.U.T on channel select.
 - Apply a 9600Baud SQ. wave signal to the E.U.T.Set the SQ. wave generator's output level at approximate 5Vrms.
 - Operate the transmitter and adjust VR2 and VR4(MOD ADJ) for \pm 2.50KHz deviation.

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RECEIVER SECTION

Receiver Front End

In the receive mode, the RF signal enters thorough the antenna, then through the low-pass filter (C10,C11,C12,C13,C14, and L10-12).

The diodes D10 and D11 are biased off so that the output of the low-pass filter is coupled (C10) to the first helical filter,T1 and to the Front End RF overload protection diode pair D10.

The signal from the band-pass filter is applied to the input of the RF amplifier Q26.

The output of the RF amplifier feeds the input to the second helical filters F10.

The output from the second helical filter is applied to the mixer's Q12.

Local Oscillator (LO)

The Receive VCO provides the LO signal. The VCO is running at 21.4MHz below the desired receive frequency and is applied to output Buffer Q22 through the low-pass filter C98 R3 and applied to the mixer Tr.Q12.

Mixer

The Mixer is a active type(Q12). The mixer LO frequency is 21.4MHz below the desired receiver frequency.

When the receiver frequency is present, the mixer output will be a 21.4MHz signal.

The signal of the mixer output is filtered by crystal filter F11 and amplified by Q13 before being applied to the input of the IF IC U11.

Inside U11, the 21.4MHz IF signal becomes the input to a second mixer with a LO frequency of 20.945MHz set by X10.

The 455KHz ceramic filter F13,14 filters the second mixer's output which is the second IF signal. The mixer's output is then fed to the internal limiting amplifier and then on to the FM decoder.

FM Detector and Squelch

The FM detector output is used for squelch, decoding tones and audio output.

The setting of the squelch adjustment potentiometer VR1 sets the input to the squelch amplifier.

The squelch amplifier is internal to U11 and its output is fed to an internal rectifier and squelch detector.

The output on U11 becomes a low (0V) to unmute the E.U.T.