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21 XLR

Alignment of P.L.L. Portion

1. Test equipment required

- a. Oscilloscope (0 - 50 MHz)
- b. Frequency counter (0 - 50 MHz)
- c. DC volt meter (10 volts maximum, 100K ohm/volt)

2. Alignment procedure

| STEP | PRESET TO | CONNECTIONS | ADJUST- MENT | REMARKS |
|------|----------------|---|-----------------|--|
| 1 | Channel 19 | Oscilloscope to secondary of L5(TP1) | L5 | Adjust L5 for the maximum indication on oscilloscope |
| 2 | Same as step 1 | Frequency counter to secondary of L5(TP1) | TC1 | Adjust TC1 to obtain 10.240 MHz indication |
| 3 | Same as step 1 | DC volt meter to Pin No. 5 of IC3(TP3) | L19 | Adjust L19 to obtain approx. 3.0V reading |
| 4 | Same as step 1 | Oscilloscope to secondary of L20 (TP4) | L20 | Adjust L20 for the maximum indication |
| 5 | Same as step 1 | Frequency counter to secondary of L20 (TP4) | L23 | Adjust L23 to obtain 37.880 MHz indication |

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Alignment of Transmitter Portion

1. Test equipment required

- a. RF output power meter
- b. 50 ohm load and attenuator
- c. Oscilloscope (0 - 30 MHz)
- d. Frequency counter (0 - 30 MHz)
- e. Audio frequency signal generator
- f. Audio frequency milli-volt meter
- g. Harmonics meter

2. Alignment procedure

| STEP | PRESET TO | CONNECTIONS | ADJUSTMENT | REMARKS |
|------|---|--|---------------------------------|--|
| 1 | Transmitter mode, No. modulation | Oscilloscope to the base of TR8 (TP7) | L18 | Adjust L18 for the maximum indication of carrier on oscilloscope |
| 2 | Transmitter mode, no modulation Channel 19 | Oscilloscope to secondary of L17 (TP7) | L17 | Adjust L17 for the maximum indication |
| 3 | Same as step 2 | RF output power meter to ANT jack (J5) | L16 L15 L12 | Adjust L16, L15, and L12 for the maximum indication on RF output power meter |
| 4 | Same as step 2 | Same as step 3 | L18 L17 L16 L15 L12 | Adjust L18, L17, L16 L15 and L12 for the maximum reading |
| 5 | Same as step 2 | Same as step 3 | L12 | Adjust L12 to obtain RF output power of 3.8 watt by rotating the slug core clockwise |
| 6 | Same as step 2 | Same as step 3 | RT5 | Adjust RT5 for a proper indication on RF power meter |
| 7 | Same as step 2 | Harmonics meter ANT jack (J5) | L9 | Adjust L9 for the minimum reading of 2nd harmonics |

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Alignment of Transmitter Portion

| STEP | PRESET TO | CONNECTIONS | ADJUSTMENT | REMARKS |
|------|---|--|------------|-------------------------------------|
| 8 | Transmitter mode, No modulation | Frequency counter to ANT Jack (J5) thru a suitable load and attenuator | | Check frequency of all channels |
| 9 | Transmitter mode, channel 19 AF input of 1,000 Hz 10mV to mike jack | Oscilloscope to ANT jack thru a suitable load and attenuator AF generator to mike jack (J3) | RT4 | Adjust RT4 to obtain 95% modulation |

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Alignment of Receiver Portion

1. Test equipments required

- a. Signal generator (455 KHz and 27 MHz band, 1,000 Hz 30% amplitude modulation and 50 ohm output impedance)
- b. AF output meter
- c. Oscilloscope (AF)
- d. Dummy load (8 ohm, 10 watt, resistive)

2. Alignment procedure

| STEP | PRESET TO | CONNECTIONS | | ADJUST- MENT | REMARKS |
|------|---|---|------------------------------|-------------------|---|
| | | SIGNAL GENERATOR | OUTPUT METER | | |
| 1 | ANL:OFF SQL:Min. VOL:Max. | To base of TR3 thru 0.01uF cap. Freq.:455 KHz | To EXT. SPKR jack (J2) | L6,L7,L8 | Adjust L6, L7 and L8 for the max- imum AF output |
| 2 | Same as step 1 channel 19 | To ANT connector (J5) Freq: 27.185MHz | Same as step 1 | L1, L2, L4. L3 | Adjust L1, L2, L3 and L4 for the maximum AF output |
| 3 | Same as step 2 | Same as step 2 and output: 0.9uV | Same as step 1 | RT1 | Adjust RT1 to obtain 2V AF output |
| 4 | ANL:OFF SQL:Max. VOL:Max, Channel 19 | Same as step 2 and Output 500uV | Same as step 1 | RT3 | Adjust RT3 to obtain 2V AF output |
| 5 | Same as step 2 | Same as step 2 and Output: 100uV | Same as step 1 | RT2 | Adjust RT2 to obtain "S 9" indication on "S" meter |
| 6 | Repeat the above adjustments, in order to confirm if the adjustments were made correctly. | | | | |